U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
NORTHWEST MOUNTAIN REGION

ENVIRONMENTAL ASSESSMENT

RELOCATION OF VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE

Jackson Hole Airport
Jackson, Wyoming

Prepared by:

Cindy Felis
Federal Aviation Administration
1601 Lind Avenue SW
Renton, WA 98055-4056
(425) 227-2370

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Section 1.0 Introduction

The Federal Aviation Administration (FAA) is tasked with ensuring the safe and efficient operation of the National Airspace System (NAS), which includes providing for safe airway navigation and control. One component of the NAS is the Very High Frequency Omnidirectional Range (VOR). The VOR is a ground-based electronic navigational aid for aircraft that transmits very high frequency signals in all directions.

The existing VOR for the Jackson, Wyoming area is currently situated near the terminal of the Jackson Hole Airport, Grand Teton National Park, Teton County, Wyoming (See Map, Appendix One). Required repairs to the existing VOR equipment building are of sufficient scope that installation of a new VOR at the airport is proposed.

The airport is within the boundary of the Grand Teton National Park and operates under an agreement with the National Park Service (NPS). Section Seven of that agreement precludes certain developments or improvements other than navigational or safety aids. Section Four of the agreement requires the airport to consult with the NPS on matters affecting the airport (NPS, 2001a).

This Environmental Assessment regarding the proposed VOR has been completed per FAA criteria (Order 1050.1D, *Policies and Procedures for Considering Environmental Impacts*) to provide sufficient information and analysis to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

Section 2.0 Purpose and Need

VOR's are a critical component of air navigation within the NAS, with over 1,200 installed at various locations across the county. Each VOR transmits very high frequency signals in all directions (360 degrees in azimuth, oriented from magnetic north). Periodically, each VOR identifies itself to pilots, and some have additional voice identification features that allow air traffic controllers to issue information and instructions to pilots. Using the system of VOR's in conjunction with enroute, charts pilots can navigate to their destinations. VOR's can also be used for instrument approach procedures.

A typical VOR system consists of a VOR dome and counterpoise mounted on a low (<15 feet) pedestal with the equipment building underneath. In some cases, the equipment building is located some distance away from the dome to provide safer access for maintenance personnel. However, nearby structures on the ground (such as fences, parked or moving aircraft, etc.) can cause interference with the VOR signal. A photograph of the existing VOR at the Jackson Hole Airport is included in Appendix Two.

The VOR at the Jackson Hole Airport provides critical navigational aid to pilots in this relatively remote area. Currently, there are three instrument approaches into the airport and two instrument departures. All of them utilize the Jackson VOR as either primary navigational aid (Navaid) for the approach or departure, or the primary Navaid for the missed approach procedure. Continued

use of a VOR system at the Jackson Hole Airport will help ensure accurate routing of aircraft and will maintain safe air traffic in this area.

Degradation of the existing VOR equipment building at the Jackson Hole Airport is such that the building must be replaced. In addition, the existing VOR is operating on waivers to standard criteria. Since the initial installation of the existing VOR, the airport has grown and expanded. Certain structures, most notably a taxiway, are closer to the navaid than normally allowed. A new location for the VOR would eliminate the need for waivers.

To avoid leaving the airport without VOR capabilities during the time period of construction, either a temporary VOR must be set up and operated or the existing VOR left in operation until a new system is constructed and prepared for operation.

Section 3.0 Evaluation of Alternatives

The selection of a site for any navigational aid is a multi-faceted process. In order to ensure that the navaid will be of the greatest benefit to the flying public, it must be placed where the signal will be clear, unobstructed, and will provide the safest possible guidance for pilots.

In the case of a VOR, there are many parameters which must be considered, as many different types of structures and terrain can interfere with the signal or distort it. When considering the nature of the function of the VOR, and the fact that human lives depend upon the accuracy of the navaid, it is imperative that the siting be picked for the best possible performance of the VOR.

See Appendix Two for photographs of proposed sites, and an aerial photograph showing the various locations. Appendix Three is the actual Siting Study as prepared by the Engineer.

Originally, four sites were studied, and then, after consultation with the National Park Service (Grand Teton National Park), a fifth site was added. The pros and cons of all of the alternatives follows.

3.1 No Action

The No Action alternative would ultimately result in the loss of the VOR at the Jackson Hole Airport. The condition of the equipment building continues to deteriorate and harsh winter conditions and leakage into the building will destroy the VOR equipment. Loss of the VOR at the Jackson Hole Airport would result in a loss of the capability for instrument procedure landings at the airport during inclement weather. Even though the airport has an Instrument Landing System, it cannot be used if the VOR is not operational, as the missed approach procedure is dependent upon the VOR.

3.2 Installation of a Temporary VOR and Replace Building at Existing Site

A temporary VOR would have to be located at least 600 feet from the current VOR in order to protect its radiated signal during removal and replacement of the current equipment building. This would require the review and amendment of all flight procedures and then a flight check at the temporary VOR location, and of course, these procedures changed again when the new VOR is completed. Another flight check would also be necessary. This is a long and difficult process which requires coordination with other FAA Regions.

3.3 Construction of a Replacement VOR (Preferred Alternative)

Four sites within the airport lease boundary had been previously identified by project engineers as potential locations for a new replacement VOR system (FAA, 2002). The locations of the four sites are included in the following table and an air photo showing the four sites is included in Appendix 2. An additional site (Site 5) has been added since the initial draft of this document, and photographs of the new location are also included in the Appendix.

Site Name	Latitude	Longitude	Location
Site 1	43° 36' 29.28"	110° 44' 5.040"	Existing VOR location
Site 2	43° 35' 32.460"	110° 44' 25.920"	Southeast of terminal
Site 3	43° 36' 38.580"	110° 44' 21.720"	North of tower
Site 4	43° 37' 19.200"	110° 43' 49.560"	North perimeter fence
Site 5	43° 37' 15.735"	110° 43' 54.067"	450' southwest of Site 4

Table 1. Alternative replacement VOR site locations.

3.3.1 Site One (Existing VOR Location)

Construction of a new VOR on or near the existing VOR location could take advantage of existing power and telephone communication (telco) hookups; however, since the present site is only operational under waivers, it is not the optimal site for any navaid. Additional future airport development that may occur in this area include placement of an Airport Surveillance Radar (ASR) by the FAA. This potential future action could also result in interference with the operation of the VOR. As well, the Airport Board is planning an expansion of the terminal building. The close proximity (200 feet) of Site One to the airport runway and taxiway also requires maintenance personnel to be present on and near the taxiway. It should also be considered that the VOR at this site would have to be replaced with Doppler VOR equipment. This calls for a large building with a much higher profile. Photographs of Site One are included in Appendix Two, and simulated photographs of the site with a Doppler VOR building are also included.

3.3.2 Site Two (Airport Southeast)

Site Two is located approximately 1000 feet southeast of the southern end of the runway, in an area that is within the lease boundary for the airport, but is outside the existing airport fence. Telco and power lines would have to be extended from the west side of the airport to this location.

Site Two is situated to avoid line-of-site issues with airport development to the north and the housing development to the west, but it may be at too great an angle to the runway centerline to support the VOR approaches from the south. This location also moves the VOR closer to the higher elevation areas south of the airport, increasing the potential for reflection interference with the VOR signal. Photographs of Site Two are included in Appendix Two.

3.3.3 Site Three (Airport West)

This site is located approximately 1000 feet west of the runway and north of the airport traffic control tower (ATCT). The close proximity of the ATCT and the glide slope can have a significant deleterious effect on the radiated VOR signal. There is also the potential for the proposed ASR discussed above to be located on the west side of the airport. which could result in additional signal reflection problems. In addition, this site could only be used with Doppler VOR equipment. This type of equipment requires a larger building and a much more unsightly antenna enclosure atop it. Even though this site is closer to the already inhabited and disturbed areas of the airport, the additional size of the building would be an intrusion into the viewshed. Photographs of Site Three are included in Appendix Two. Comparison simulated photographs showing the Doppler VOR imposed on the existing site are also included.

3.3.4 Site Four (Airport North)

Site Four is located on the extended runway centerline at the northern boundary of the airport lease boundary, approximately 2,500 feet north of the end of the runway. Based on the location north of the runway and near the property lease boundary, this is the site with the least potential for impacts from future airport development or construction, and the best for signal propagation. However, the further north anything is placed on the airport, the greater the potential for the structure to interfere with the pristine view of the Tetons. A disruption to the existing viewshed is an impact that should be avoided, if at all possible. Photographs of Site Four are included in Appendix Two.

3.3.5 Site Five (Airport North) – Preferred Alternative

Site Five was added to the original four sites and has the advantages of Site Four without the disadvantages. The site is 450 feet south of Site Five, and 150 feet west of centerline. This site would not require a Doppler VOR and is far enough to the south to be considered as part of the already disturbed airport area. In addition, this site was chosen as the preferred alternative because the building can be constructed in a natural depression, thus further minimizing the profile. Appendix Two holds simulated photographs of Site Five with the VOR in place.

3.3.6 Site Evaluation

Based on the evaluation of the five sites, Site Five was picked as the Preferred Alternative. This selection was coordinated with National Park Service personnel from Grand Teton National Park. The site meets the requirements of the FAA for navigational purposes, and is the least intrusive on the viewshed of the acceptable sites.

Section 4.0 Proposed Federal Action

Construction of a new VOR at Site Five at the Jackson Hole Airport, Teton County, Wyoming is proposed. The proposed VOR would consist of two components: an equipment building and a counterpoise/VOR dome situated on top of an adjacent steel base structure (offset at differing distances for each site). A photograph of the existing VOR system is included in Appendix Two and the new system would look similar. For the Preferred Alternative, the counterpoise and VOR dome would be located 150 feet off the runway centerline approximately 2,100 feet north of the runway end. The equipment building would be located approximately 350 feet west of the counterpoise.

The proposed equipment building is a prefabricated 612 ft^2 (17' x 36'), ten-foot tall structure that will be set onto a poured concrete slab. The steel pedestal for the counterpoise and VOR dome will be approximately 144 square feet (12' x 12') and 8 feet tall. The circular counterpoise will be situated on top of the pedestal and the VOR dome will extend approximately 6 feet above the top of the pedestal (total height of approximately 14 feet). The concrete slab beneath the pedestal will be supported by drilled-in-place footings set to a depth of approximately 5 feet. Depending upon site conditions, the height of the building/antenna could be as much as two feet less than given here.

To avoid visual impacts, the VOR system components installed at the Jackson Hole Airport will be painted to blend with the surroundings, rather than the traditional red and white.

An existing gravel access road extending northward from the north end of the runway would need to be extended to allow access to the proposed VOR site. Some shallow excavation would be required to construct the foundations for the equipment building and pedestal. Power and telco cables extending from the ATCT to the VOR system would be buried in a trench approximately 2 feet deep.

Section 5.0 Affected Environment

5.1 Physical Elements

5.1.1 Property Location

Jackson Hole Airport is operated by the Jackson Hole Airport Board and is situated on approximately 533 acres of land leased from the National Park Service. The airport is within the boundaries of the Grand Teton National Park. The boundary of the national park coincides with the southwestern boundary of the airport and private property is located across Spring Gulch Road.

The airport reference point (ARP) is located at Latitude 43° 36' 26.37" North and Longitude 110° 44' 15.86" West and has an elevation of 6447 feet above mean sea level (MSL). The airport is located on segments of Sections 11, 14 and 15, Township 42 North, Range 116 West (U.S.G.S, 1968).

The airport has one asphalt runway (18/36) that is 6,300 feet long and orientated approximately 18° east of true north. The Jackson Hole Airport serves a diverse aviation community with aircraft types ranging from small, single engine General Aviation craft to helicopters, business jets, and commercial carriers.

The climate is described as semi-arid mountain, with temperature extremes ranging from 93° F to –46° F. The average snowfall in Jackson Hole is 150", the mean annual precipitation is 17.42", and the average annual relative humidity is 50 percent.

5.1.2 Property History

The existing Grand Teton National Park is the result of three acts by the Federal Government setting land aside for public use. The original park was established by Congress in 1929 and included only the Teton Range and six glacial lakes at the base of the range. The Jackson Hole National Monument was created by Presidential Decree in 1942 and included the Teton National Forest, Jackson Lake and 35,000 acres of land donated by John D. Rockefeller, Jr. In 1950 Congress combined the original park and the National Monument into the current approximately 310,000 acre Grand Teton National Park.

The airport began operation in 1930 with an unpaved runway. In 1939 a lease agreement with the Bureau of Land Management was made and the airport was included within the boundaries of the Jackson Hole National Monument in 1943. Commercial air service began in 1946 and the runway was expanded in 1959. In 1983 the airport and the National Park Service entered into an agreement that allows the Jackson Hole Airport Board to operate the airport within the park boundaries. The master plan for the Grand Teton National Park considers the airport a Class II operational enclave, with the surrounding park property designated as Class III. The Class III designation describes a transition zone between high density use zones and prime wilderness areas (NPS, 2001a).

5.1.3 Regional Geology

Jackson Hole Airport is located within the Jackson Hole physiographic region and is surrounded by the Teton, Gros Ventre and Absaroka Mountains. The area is within the Gros Ventre uplift tectonic belt of the Northern Rocky Mountain Regions (AAPG, 1981). The phrase "Jackson Hole" was coined by early European visitors to describe the mountain valley lying between the Gros Ventre and Teton Mountains. The valley is approximately 50 miles long and 15 miles wide and is a result of drop-block faulting, whereby the valley block descends vertically downward while the adjacent blocks of mountains rise vertically upward.

Subsequent glacial advance and retreat and erosion from adjacent mountain ranges and deposition in the valley floor have resulted in extensive thicknesses of fine to coarse grained sedimentary deposits in the valley floor.

5.1.4 Site Geology

The Jackson Hole Airport is situated on a generally level segment of the valley floor between the Gros Ventre River to the east and the Snake River to the west. The surface slopes towards the southwest at approximately 0.008 ft/ft.

The near-surface geology in this area consists of Quaternary alluvial and glaciofluvial sediments, ranging in size from cobbles to silt (WDEQ, 1998). These materials tend to be highly permeable and well-drained.

5.1.5 Groundwater

The Jackson Hole Airport is situated within an alluvial valley region of the western mountain range groundwater region of Wyoming (WDEQ, 1998). Groundwater in the area of the airport is primarily present within unconfined, alluvial aquifers. These alluvial aquifers have been designated as "high sensitivity" by the State of Wyoming due to the shallow water table and permeable soils.

Since there would be no extensive excavation, depth to groundwater at the airport was not determined as part of this EA but is expected to be less than 50 feet, with seasonal fluctuations that follow precipitation patterns.

5.1.6 Surface Water

There are no perennial surface water bodies present on the Jackson Hole Airport. Significant surface water features are the Snake River (approximately 1.5 miles west) and the Gros Ventre River (approximately 2 miles east). Several irrigation drainage channels are present on the southern segment of the airport property, which drain predominantly westward towards the Snake River.

5.1.7 Wetlands

There are no wetlands present on the Jackson Hole Airport. Scattered wetlands are located in the developed area west of the airport and also along some ephemeral drainages to the Snake River, approximately ¾ miles northwest of the airport. Wetland information for the area around Site 4 and one mile surrounding is included in Appendix 4.

5.2 Biotic Elements

5.2.1 Flora

The vegetation at the Jackson Hole Airport is predominantly sage, grass and small shrubs. There are no trees present on the airport, although some are present to the south adjacent to the Gros Ventre River and nearby irrigation ditches.

5.2.2 Fauna

Over 50 mammal species and over 300 bird species occur within the Grand Teton National Park and adjacent areas (NPS, 2001b). Due to the activities typical for operation of an airport and the security fence that surrounds the airport few of these species are typically found at the Jackson Hole Airport.

Mammal species that have been observed on the airport include fox, coyote, rabbits and other small mammals. Mule deer, moose and elk are often present outside the airport perimeter fence. Sage grouse, *Centrocercus urophasianus,* are present at the airport between April and October and two leks (also called "strutting grounds") have historically been very active (NPS, 2001a). Leks are traditional locations (visited year after year) where males congregate and display in order to attract and breed with females. The birds are so "faithful" to their lek locations, that at the Jackson Hole Airport, the birds still strut on their traditional lek, even though it has been covered with asphalt due to a runway expansion. (NPS personal communication, 2003)

"Sage grouse were historically found throughout the western United States and southern Canada wherever sagebrush occurred. Populations throughout their range have been experiencing serious declines over the last 50 years, and in the last 20 years, declines have been dramatic. Sage grouse no longer live in five states and one Canadian province." This quote is from an article by Tom Christiansen for *Wyoming Wildlife News*." The fact that the bird's populations are declining is evident, but the reasons for the decline are varied and no one cause can be singled out, except to say that loss of habitat is a problem. The Wyoming Game and Fish Department has taken the position that while the populations in Wyoming may be depressed, they are not depressed to the point of needing federal listing to protect them. The Wyoming population of the sage grouse is the healthiest of all. In July of 2002, the draft *Wyoming Greater Sage-Grouse Conservation Plan* was published by the Game and Fish Department. In this document, the Breeding Habitat (Leks) are described.

> Breeding occurs on strutting grounds (leks) during late March and April. Leks are generally situated on sites with minimal sagebrush, broad ridge tops, grassy openings, and disturbed sites such as burns, dry lakebeds, abandoned well locations, airstrips or roads. Sage-grouse select spots with less herbaceous and shrub cover than surrounding areas as lek sites. Leks are generally proximal to nesting habitat.

Other references (*Life Histories of North American Gallinaceous Birds*, Arthur C. Bent) place the lekking during April and May. In a personal communication with Joseph Bohne of the Wyoming Department of Game and Fish, Mr. Bohne stated that due to the higher elevations in the Jackson area, the grouse often start to lek later in the year, and can go as long as mid-May. This was borne out by the National Park Service Biologist, Sue Wolf, Grand Teton National Park.

5.2.3 Threatened and Endangered Species

Region Six of the U.S. Fish and Wildlife Service (USFWS) provides a list of species present within each state in the region that are federally protected under the Endangered Species Act (ESA). As of March 26, 2002 there were 19 (four plant and 15 animal) species listed as either threatened or endangered under the Endangered Species Act in Wyoming (Table Two).

Of these species, the three fishes (Kendall Warm Springs Dace, pikeminnow and razorback sucker) and the Wyoming toad do not have any suitable habitat on the Jackson Hole Airport. The whooping crane is rarely seen in the Snake River Valley and is unlikely to be found at the airport (NPS, 2001b). Preble's meadow jumping mouse requires mature plains riparian vegetation with relatively undisturbed grassland and a water source in close proximity (USGS, 2000).

Common Name	Formal Name	Status
Animals		
Grizzly Bear	*Ursus arctos horribilis*	Threatened
Whooping Crane	*Grus americana*	Endangered
Kendall Warms Springs Dace	*Rhinichthys osculus thermalis*	Endangered
Bald Eagle	*Haliaeetus leucocephalus*	Threatened
Black-footed Ferret	*Mustela nigripes*	Endangered
Canada Lynx	*Lynx canadensis*	Threatened
Preble's Meadow Jumping Mouse	*Zapus hudsonius preblie*	Threatened
Colorado Pikeminnow	*Ptychocheilus lucius*	Endangered
Razorback Sucker	*Xyrauchen texanus*	Endangered
Wyoming Toad	*Bufo baxteri*	Endangered
Gray Wolf	*Canis lupus*	Endangered
Plants		
Colorado Butterfly Plant	*Gaura neomexicana var coloradensis*	Threatened
Blowout Penstemon	*Penstemon haydenii*	Endangered
Ute Ladies-tresses	*Spiranthes diluvialis*	Threatened
Desert Yellowhead	*Yermo xanthocephalus*	Threatened

Table Two. List of Threatened and Endangered Species in Wyoming.

The desert yellowhead is endemic to the Wind River Basin in Fremont County, Wyoming and the Colorado Butterfly Plant is found only in southeastern Wyoming (Fertig, 1994). Habitat for the blowout penstemon is open, sandy wind-excavated depressions in sand dunes tops. Ute Ladies-tresses are a perennial orchid that prefers seasonally inundated wetlands. There is no suitable habitat present at the Jackson Hole Airport for these plant species and no occurrence of these species on the airport has been reported.

Thus, threatened or endangered animal species potentially present on airport property are the bald eagle and the black-footed ferret. Also, it should be mentioned that the grizzly bear, Canada lynx, and gray wolf are inhabitanat of Grand Teton National Park.

Grizzly Bear

"Grizzly bear habitat has dwindled to less than 2% of what it once was. Fragmented zones of existence are all that remain for the American Grizzly Bear. Destruction and degradation of grizzly bear habitat and human-caused mortality are the greatest threats to the continued existence of the grizzly bear in the lower forty-eight. Existing grizzly bear habitat must be protected, depleted grizzly bear habitat restored, and fragmented grizzly bear recovery zones connected by corridors if the American Grizzly Bear is to "recover"." These words woere penned by James Musgrove on his website, http://home.att.net/~jrmusgrove/.

The grizzly bear is primarily nocturnal, and is a solitary species. Grand Teton National Park is a safe haven for the bears, and to ensure that they do not stray onto the airport, a fence, especially designed to keep wildlife out, surrounds the entire airport. This should ensure that no bears would come onto the airport.

Canada Lynx

The lynx generally inhabits forested wilderness areas. It favours old growth boreal forests with a dense undercover of thickets and windfalls. However, this carnivore will populate other types of habitat as long as they contain minimal forest cover and adequate numbers of prey, in particular snowshoe hares. Lynxes are remarkably tolerant of human settlement if unmolested. However, since there is no forest land on or even near the airport, one would not expect to find the animal there.

Gray Wolf

The gray wolf is one of the most adaptable of all animals, and is also known to be tolerant of human activity, according to the U.S. Fish and Wildlife Service. (http://species.fws.gov/species_accounts/bio_gwol.html). While the wolves do inhabit Grand Teton National Park, the wildlife fence at the airport would keep them from harm.

Bald Eagle

Bald eagles (*Haliaeetus leucocephalus*) are considered sea or fish eagles and are members of the Accipitridae family, which also includes hawks, kites and vultures. They are the only eagle unique to North America. There are an estimated 50,000 bald eagles currently present in the United States, with approximately 80% of these found in Alaska.

Historical populations of bald eagles may have reached 500,000 based on evaluations of reports written by early European settlers. Loss of habitat, attacks by fisherman (fisherman once feared the eagles were a threat to salmon populations) and the widespread use of the pesticide DDT

reduced the population in the continental U.S. by the early 1970's to several hundred breeding pairs. The bald eagle was designated an endangered species in 1976 under the ESA. In 1994, twenty-two years after DDT was banned, the bald eagle was upgraded from endangered to threatened under the ESA.

As a result of continued improvement in breeding pair populations, the USFWS proposed that the bald eagle be declared fully recovered, with final action due in July 2000. However, this action was delayed as the USFWS determines how the bald eagle will be managed after it is removed from the ESA list. As of April 2002 the bald eagle is still designated at threatened under the ESA. If removed from the list, bald eagles will still be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Grand Teton National Park lies within the Greater Yellowstone Recovery Area for bald eagles. Management for bald eagles includes annual nest surveys, seasonal area closure around nesting sites and nest monitoring. There are 10 known nesting territories and pairs in the park, however not all pairs return to the park each year (NPS, 2001b). Known nesting sites occur along the Snake River, adjacent riparian areas, and Jackson Lake. Nesting begins in February and eggs are typically hatched in March or April, with chicks fledging in May or June. Nearby food, suitable perches and security from human activities are important habitat components for bald eagle nest sites (NPS, 2001b).

5.3 Socioeconomic Elements

The Jackson Hole Airport is located in Teton County, Wyoming approximately eight miles north of Jackson. Teton County is over 3.8 million acres in size, of which approximately 97 percent is under the management of the state and federal government. Jackson is the only incorporated city in the county, and acts as the county seat.

The population in Teton County rose by 63% between 1990 and 2000, with the population in 2000 at 18,251 (U.S. Census Bureau, 2002). Of these, 93% were caucasian, 6% were hispanic, other population classifications each reporting less than 1% of the total. A summary of 2000 census results for Teton County are included in Appendix Five.

5.4 Wilderness and Recreation Elements

The Jackson Hole Airport is located within the Grand Teton National Park. Other significant wilderness and recreation elements in the area include Yellowstone National Park, the National Elk Refuge, and the Teton National Forest.

Section 6.0 Environmental Consequences

NOTE: With the exception of Viewshed and the Sage Grouse Issues, all of the alternatives are nearly equal in the extent of impacts to them. Therefore, only in the two areas mentioned, will the alternatives be analyzed separately.

6.1 Physical Elements

6.1.1 Soils and Geology

The proposed construction of a VOR at the airport would have little or no effect on soils or geology in the area. A small area of shallow (less than three feet) excavation would be required for construction of the foundation for the building and VOR dome pedestal. Footing for the foundations would extend to approximately five feet. Trenching (approximately two feet deep) would be required for placement of the power and telco utility lines that would connect the proposed VOR with the tower.

Due to the generally level surface slope and low rainfall amounts in the summer, the potential for erosion and turbid runoff from the construction area is slight. The contractor would take the appropriate erosion control measures to prevent any runoff of turbid water from occurring. The amount of soil requiring excavation is sufficiently small that the generation of dust and wind-borne materials is low. The contractor will abide within the parameters of Best Management Practices (BMP's) to prevent the formation of fugitive dust, such as spraying exposed soils and dirt roadways periodically with water.

Operation and maintenance of the VOR would have no significant impact on the soils or geology at the site with any of the action alternatives. The surface areas disturbed during construction will be reclaimed via seeding and periodic maintenance visits will not produce any soil disturbance.

The No Action Alternative would have no significant impact.

6.1.2 Viewshed

"[Grand Teton National Park] encompasses nearly 310,000 acres and protects the Teton Range, Jackson Hole (mountain valley), a 50-mile portion of the Snake River, seven morainal lakes, over 100 backcountry and alpine lakes, and a wide range of wildlife and plant species." This quote from the Official Website for the park http://www.nps.gov/grte/home.htm, imparts the whats and wheres of the park, but words alone cannot describe the magnificent beauty of the area. Approximately 4 million visitors come to Grand Teton every year with a desire to experience the adventure and beauty of this great wild place. With this in mind, the National Park Service endeavors to keep the area in as pristine a condition as possible. The airport at Jackson Hole is one of the northernmost vestiges of "civilization", and therefore, the National

Park Service wants to keep the northern portion of the airport property as free from visual distractions as possible within the parameters that still allow for safety of flight. With this in mind, the five alternatives for the VOR relocation project have been evaluatd.

The No Action Alternative would not impact the viewshed, however, should the airport become hampered without the VOR, many of the visitors would never get to the park.

Site One – Replacing the existing VOR at the same site would mean the installation of a Doppler VOR which is much larger and more unsightly than the existing type. Reference Paragraph 3.3.1 this document for a full discussion of this site, and see photographs of Site One in Appendix Two, and simulated photographs of the site with a Doppler VOR building are also included.

Site Two - While this site would perhaps be better from the standpoint of the viewshed, it is situated to avoid line-of-site issues with airport development to the north and the housing development to the west, but it may be at too great an angle to the runway centerline to support the VOR approaches from the south. This location also moves the VOR closer to the higher elevation areas south of the airport, increasing the potential for reflection interference with the VOR signal. Photographs of Site Two are included in Appendix Two.

Site Three – Once again, this site would be beneficial insofar as the viewshed is concerned, however, the close proximity of the Airport Traffic Control Tower and the glide slope can have a significant deleterious effect on the radiated VOR signal. There is also the potential for the proposed ASR discussed above to be located on the west side of the airport. which could result in additional signal reflection problems. In addition, this site could only be used with Doppler VOR equipment. This type of equipment requires a larger building and a much more unsightly antenna enclosure atop it. Even though this site is closer to the already inhabited and disturbed areas of the airport, the additional size of the building would be an intrusion into the viewshed. Photographs of Site Three are included in Appendix Two. Comparison simulated photographs showing the Doppler VOR imposed on the existing Site Three are also included.

Site Four - Site Four is located on the extended runway centerline at the northern boundary of the airport lease boundary, approximately 2,500 feet north of the end of the runway. Based on the location north of the runway and near the property lease boundary, this is the site with the least potential for impacts from future airport development or construction, and the best for signal propagation. However, the further north anything is placed on the airport, the greater the potential for the structure to interfere with the pristine view of the Grand Tetons. A disruption to the existing viewshed is an impact that should be avoided, if at all possible. Photographs of Site Four are included in Appendix Two.

Site Five – *Preferred Alternative* – Chosen as the preferred alternative because of its combination of qualities – low aesthetic profile, high navigational proficiency - Site Five has the advantages of Site Four without the disadvantages. This site would not require a Doppler VOR and is far enough to the south to be considered as part of the already disturbed airport area. In addition, the building can be constructed in a natural depression, thus further minimizing the profile. See Appendix Two for a photograph of Site Five with a simulation of the proposed VOR

Considering the above information, it can be implied that while there would be some effect on the viewshed with any of the alternatives, that effect can be minimized. Also, it should not be forgotten that the demolition of the existing VOR would remove one effect. Consequently, the proposed relocation of the VOR at the Jackson Hole Airport would not have significant impacts to the viewshed. The No Action Alternative could be considered to have no effect, however, there would also be no removal of the existing site.

6.1.3 Air Quality

There would be no impact to air quality during construction of the proposed VOR. The amount of soil requiring excavation is sufficiently small that the generation of dust and wind-borne materials is low. The contractor would take appropriate measures to prevent the formation of fugitive dust, such as spraying exposed soils and dirt roadways periodically with water, if necessary.

Operation and maintenance of the proposed VOR would not generate any significant emissions to the air. While the system has a back-up generator, the engine runs on propane and does not produce air pollutants.

The two paragraphs above apply to each of the alternatives, and demonstrate that no significant impact to air quality would occur with the proposed project. The No Action Alternative would have no significant impact to air quality.

6.1.4 Water Quality

Construction of the proposed VOR would have no impact on water quality. Due to the generally level surface slope and low rainfall amounts in the summer, the potential for erosion and turbid runoff from the construction area is slight. The contractor would take the appropriate erosion control measures (BMP's) to prevent any runoff of turbid water from occurring.

Operation and maintenance of the proposed VOR would pose no threat to water quality. No compounds will be used or generated that could infiltrate through the soil to the shallow aquifer, and the fuel storage tank holds propane.

The No Action Alternative would have no significant impact, and as established by the preceding two paragraphs, neither would any of the action alternatives.

6.1.5 Wetlands

Wetland maps showing information from the National Wetland Inventory are included in the documents in Appendix Four. There are no wetlands at or near the proposed VOR locations. The nearest wetlands are situated approximately ¾ of a mile west of the site. Erosion control methods during construction would prevent the runoff of turbid water from the construction zone, and none would reach wetlands. Accordingly, construction and operation of the VOR would have no impact on wetlands with any alternative, action or no action.

6.1.6 Floodplains

An Executive Order directs Federal agencies to take actions to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains (Executive Order #11988, 1987). Accordingly, it is FAA policy to avoid encroachment into floodplains with FAA actions, including construction of FAA facilities, unless no suitable alternative is available.

National Flood Plain Data for the area is included in Appendix Four. The proposed locations of the VOR do not lie within either the 100- or 500-year flood plains. Accordingly, construction or operation of the proposed VOR at any of the alternative sites would not be impacted by, nor impact, any floodplains. The No Action Alternative would have no significant impact.

6.1.7 Coastal Zone Management Areas and Coastal Barriers

Based on the location of the proposal, these categories are not applicable.

6.1.8 Farmland

The location of the proposed VOR is on airport lease property within the boundary of the Grand Teton National Park. There are no farmlands present at or near this location. The poor quality soil, low precipitation, inclusion in the national park boundary, and park designation for use by the airport all preclude farming at this location. Accordingly, the construction and operation of the proposed VOR would not have any impact on farmlands.

6.1.9 Construction Effects

During construction, the contractor would assure that common practices for sound soil conservation procedures (to include blowing soil, soil erosion from water runoff, etc.) are in place. This would include wetting the area to reduce fugitive dust, and the construction of erosion fences, if necessary. The construction site would be cleaned at the end of each work period. The contractor would ensure that disposal of all construction debris is in accordance with state and local regulations and that debris is removed from the site on a daily basis and disposed of at an approved disposal facility.

Noise impacts from construction will be insignificant due to the remote location of the projet, and when compared to the routine noise of aircraft landing and taking off.

6.1.10 Solid Waste Effects

The VOR equipment produces no waste of any kind, and servicing technicians are not on site long enough at any given time to require sanitary facilities. During construction, portable sanitary facilities would be provided if necessary. No negative impacts from solid wastes would occur from the proposed action.

There are no impacts to solid waste at present, so the No Action Alternative would have no impact.

6.2 Biotic Elements

6.2.1 Flora

Construction of the proposed VOR would result in the permanent removal of vegetation (predominantly sage) over approximately 1,000 square feet at the equipment building and VOR pedestal combined. Depending upon the chosen site, as much as 9,000 square feet of surface could be permanently disturbed by construction of a gravel access road extending to the site. This is the longest the road would be, and this would be if Site Four were to be used. The preferred alternative is Site Five and is 450 feet closer and would, therefore, disturb less area for the road. Other areas disturbed by construction and trenching would be restored and revegetated after the proposed construction is completed. Also, the demolition of the existing site would leave the area vacant and it would recover its natural vegetation.

The loss of approximately 10,000 square feet (or less) of sage vegetated area is an impact, it would not be considered significant, as the area is within the boundary set aside for operation of the airport. Operation and maintenance of the proposed VOR would have no significant impact on flora at the airport. This applies to each of the alternatives, even though some would cause more disturbance than others (length of maintenance access road). With the No Action alternative, there would be no impact to flora.

6.2.2 Fauna

Construction of the proposed VOR system would not have a significant impact on animal species present at the airport. While some individuals may be disturbed during construction it is anticipated that most will shift their activities away from the construction site and return after construction is complete.

6.2.2a Sage Grouse

There are Sage Grouse leks (areas where the males of the species strut and display to attract females during the breeding season) on the airport. Please see paragraph 5.2.2 above for further discussion of the grouse. While Sage Gourse are not endangered the population is in serious decline and the FAA would plan construction so as to protect the birds and their habitat. The leks would be marked so that they could be avoided by trucks, personnel and equipment. Also, since the birds strut until mid-May, construction would be delayed until after then, and to be certain no straggler would be harmed or frightened, construction would start after 8:00 am, as the birds are finished strutting by this time. (Bent p.301; Wolf, NPS personal communication)

It should be mentioned that the construction of the new VOR site would remove a small amount of sagebrush, i.e. sage grouse habitat. However, the same amount of ground would be opened up for the sage brush to move in when the old VOR is demolished. Therefore, the loss of habitat would be temporary.

Construction, operation, and maintenance of the proposed VOR system would have no significant impact on animal species at the airport with any of the proposed alternatives.

The No Action Alternative would have no impact.

6.2.3 Threatened and Endangered Species

There are no federally designated critical wildlife, fisheries, or plant habitats at or near the project area. Accordingly, construction and operation of the VOR would not adversely affect, destroy or modify designated critical habitat.

The nearest bald eagle nesting sites are over a mile from the airport (NPS, 2001b). The airport does not provide good nesting or perching habitat, food, or protection from human activities. All of these are important habitat components for bald eagles and their absence reduces the potential for the presence of bald eagles at the airport. Construction, operation and maintenance of the proposed VOR at Site 4 will is not likely to adversely affect bald eagles.

Other endangered species that are present in Grand Teton National Park are the gray wolves, grizzly bear, and Canada lynx. While these animals have been recorded in the park, they do not frequent the airport. All of these animals would be excluded from airport property by the wildlife fencing that surrounds the airport.

Therefore, the proposed project would not adversely affect any threatened or endangered species, and the no action alternative would also have no adverse effect.

6.3 Socioeconomic Effects

6.3.1 Noise

The proposed construction of the replacement VOR at Site Five, or any of the proposed alternatives, would not result in any additional aircraft noise at the Jackson Hole Airport. Continued use of a VOR at the airport is to ensure continued safe flight operations, not to increase capacity. Operation of the proposed VOR at Site Five would not generate additional noise nor result in alterations of flight patterns for aircraft in the vicinity of Jackson Hole Airport.

Some noise would be associated with construction activities but this noise would be temporary and not significant when compared to the ambient noise at the airport.

The No Action Alternative would have no significant impact.

6.3.2 Compatible Land Use

According to FAA Order 1050.1D, Attachment 2, Paragraph 2(a), "The compatibility of existing and planned land uses is usually associated with the extent of noise impacts related to that

airport. In this context, if the noise analysis described above concludes that there is no significant impact, a similar conclusion usually may be drawn with respect to compatible land use."

Since the proposed project is located on airport property, is consistent with the Grand Teton National Park Master Plan Class II designation for the airport, and no significant noise impacts are expected, there are no significant impacts in the area of compatible land use with any of the alternatives.

6.3.3 Environmental Justice

An Executive Order concerning environmental justice requires that Federal agencies address environmental justice by identifying disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority/low-income populations. (Executive Order #12898, 1994).

Construction, operation and maintenance of the proposed VOR system will require no relocation of homes or businesses, and all of the construction of the proposed project would take place on airport property. Accordingly, the only possible environmental justice impact would have to come from noise. It has been shown that there would be no significant noise impacts to anyone with any of the alternatives, and therefore not to minority or low-income populations.

6.3.4 Light Emissions

No significant light emission would be associated with construction, operation or maintenance of the proposed VOR system. There would most llikely be a steady burning red light atop the VOR antenna to preclude aircraft from impacting the facility.

6.3.5 Historic, Architectural, Archeological and Cultural Resources

As part of the preparation for this document a computer search of appropriate and relevant databases was made for the sites. This search included evaluation of the National Register of Historic Places and the State Historic places database. Copies of these reports are included in Appendix Four. No historic places were identified as located at or near (within 1/8 mile) of the proposed locations of the replacement VOR.

A letter was also sent to the Wyoming State Historic Preservation Officer (SHPO) requesting a file search for any resources located at or near the proposed location for the replacement VOR. The SHPO replied that no archeological or historic sites are known to exist in the proposed project area. The area was surveyed in 1993 for cultural resources as part of the airport expansion and the SHPO determined that no Class III cultural resource survey was warranted for the proposed project. Copies of these letters are included in Appendix Six.

The proposed project would not disturb any historic, architectural, archeological or cultural resources. In the event that a historic, architectural, archaeological or cultural artifact should be unearthed during construction, an immediate "Stop Work" order would be issued and the National Park Service and SHPO would be informed.

6.3.6 Transportation Effects

There will be no transportation impacts from construction, operation or maintenance of the proposed VOR system. The proposed location of the preferred alternative is situated on airport property approximately 2,650 feet west of Highway 26. Construction activities would add some additional short-term traffic to the airport and Highway 26 but this impact would be minor and short-lived. Therefore, no significant impacts to transportation would occur with any of the action alternatives, and certainly none with the No Action.

6.4 Wilderness, Recreation, and Ecosystem Effects

6.4.1 Wild and Scenic Rivers

In the 1960's Congress created the National Wild and Scenic Rivers System. In October of 1968, the Wild and Scenic Rivers Act pronounced:

> *It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dams and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.*

The National Park Service provides a list of federally designated Wild and Scenic Rivers in Wyoming (NPS, 2002). The only listed reach in Wyoming is Clark's Fork of the Yellowstone River. This river is on the northern border of Wyoming with Montana. It follows Highway 296 and then over and onto Highway 72 and into Laurel, Montana. The closest this fork comes to Jackson Hole Airport is over one hundred miles "as the cow flies".

Construction, operation and maintenance of the proposed replacement VOR at the Jackson Hole Airport would have no impact on Wild and Scenic Rivers, nor would the No Action alternative.

6.4.2 Department of Transportation Act, Section 4(f)

Section 4(f) of the Department of Transportation (DOT) Act was enacted in 1966 (hence the reference to "Section 4(f)"). In January 1983, Section 4(f) was amended and codified in 49 U.S.C. Section 303. The wording in Section 303 reads as follows:

> "(a) It is the policy of the United States Government that special effort be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.
>
> (b) The Secretary of Transportation shall cooperate and consult with the Secretaries of the Interior, Housing and Urban Developments, and Agriculture, and with the States, in

developing transportation plans and programs that include measures to maintain or enhance the natural beauty of lands crossed by transportation activities or facilities.

(c) The Secretary may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation areas or wildlife and waterfowl refuge, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over site) only if,

(1) there is no prudent and feasible alternative to using that land; and
(2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuges or historic site resulting from the use."

Since the entire proposed project would be contained within the lease boundary of the airport, the project would not impact any Section 4(f) properties with any of the alternatives.

Section 7.0 Cumulative Effects

The proposed replacement VOR system is located within the lease boundaries of the Jackson Hole Airport. Additional proposed projects at the airport include construction of a helicopter base on the east side of the runway (near the current VOR location) (NPS, 2001). Construction of an Airport Surveillance Radar (ASR) is also under consideration but no location has been selected, and a terminal expansion has been approved to add approximately 12,000 square feet to the existing terminal.

The number and scope of these projects, including the replacement VOR, are typical for continued operation of a small to medium-sized airport. Construction of the proposed VOR will not have a significant cumulative impact on the airport or adjacent areas.

Section 8.0 List of Preparers

PREPARED BY:

Joseph Gibbens, P.E. - Environmental Program Engineer, Seattle Implementation Center, Federal Aviation Administration.
Bachelor of Science in Geology, University of North Dakota. Master of Science in Hydrology, New Mexico Institute of Mining and Technology. Eleven years experience doing environmental assessments, due diligence audits, environmental restoration, construction management and water resource evaluations.

Cindy Felis – Environmental Program Manager, FAA, Seattle Implementation Center. Email: cindy.felis@faa.gov (425) 227-2370

Bachelor of Science in Biology and Geology, University of Alabama. Received Graduate Fellowship in Geology, University of Alabama. Graduate Studies in Biology, Cameron University, Lawton, Oklahoma. Member Board of Directors Oklahoma Ornithological Society -

7 Years. Curator of Birds - Cameron University Museum of Zoology. Instructor of Biological Sciences - Cameron University. Ten years experience doing environmental and biological assessments for the FAA.

ASSISTANCE AND ADVICE GIVEN BY

Dan Sage, Project Engineer, Federal Aviation Administration

Julia Stoudt, Project Engineer, Federal Aviation Administration

Jeanne Kirkpatrick, Assistant Airport Director, Jackson Hole Airport

Sue Wolf, National Park Service, Grand Teton National Park

Gary Pollock, National Park Service, Grand Teton National Park

Joseph Bohne, Wyoming Department of Game and Fish

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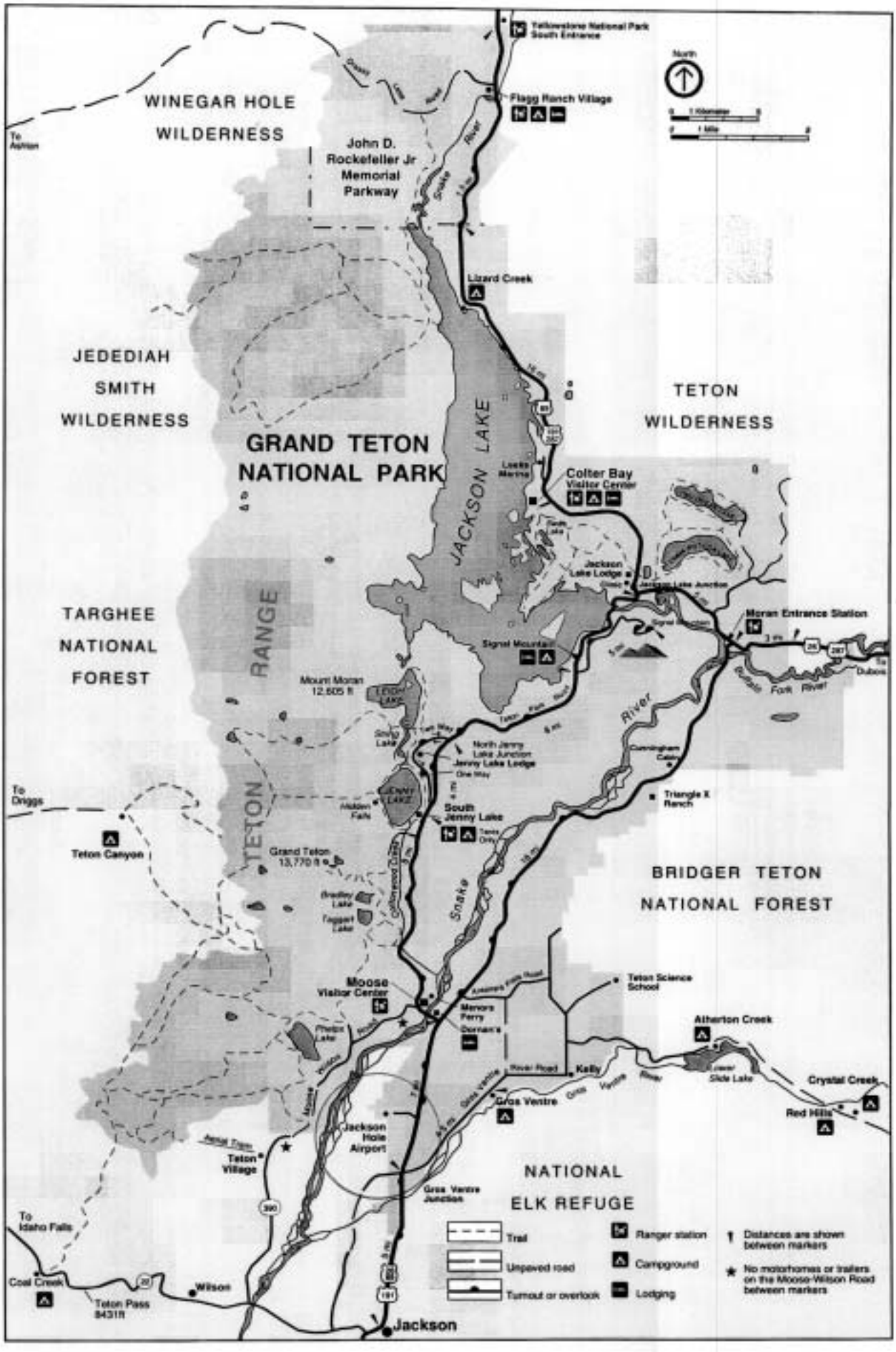
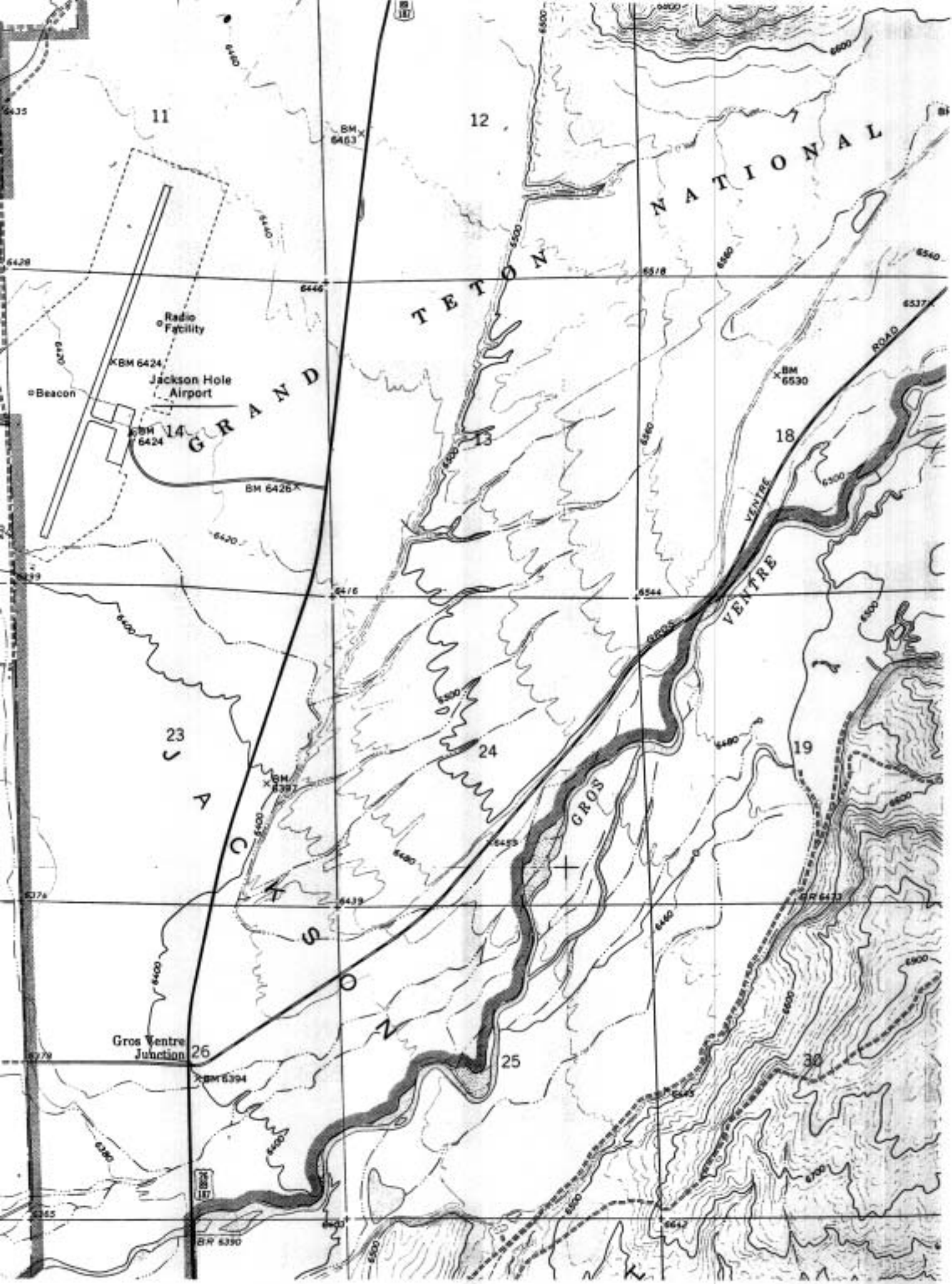
APPENDIX ONE
SITE LOCATION MAPS


WINEGAR HOLE WILDERNESS
John D. Rockefeller Jr Memorial Parkway
Yellowstone National Park South Entrance
Flagg Ranch Village
Lizard Creek
JEDEDIAH SMITH WILDERNESS
GRAND TETON NATIONAL PARK
JACKSON LAKE
TETON WILDERNESS
Colter Bay Visitor Center
Jackson Lake Lodge
Moran Entrance Station
TARGHEE NATIONAL FOREST
TETON RANGE
Mount Moran 12,605 ft
Signal Mountain
Snake River
South Jenny Lake
Teton Canyon
Grand Teton 13,770 ft
BRIDGER TETON NATIONAL FOREST
Moose Visitor Center
Teton Science School
Atherton Creek
Kelly
Gros Ventre
Crystal Creek
Red Hills
Jackson Hole Airport
Teton Village
NATIONAL ELK REFUGE
Gros Ventre Junction
To Idaho Falls
Coal Creek
Teton Pass 8431ft
Wilson
Jackson
Trail
Unpaved road
Turnout or overlook
Ranger station
Campground
Lodging
Distances are shown between markers
No motorhomes or trailers on the Moose-Wilson Road between markers


GRAND TETON NATIONAL
JACKSON
Radio Facility
Jackson Hole Airport
Beacon
BM 6424
BM 6426
BM 6463
BM 6530
BM 6387
BM 6394
Gros Ventre Junction
GROS VENTRE
ROAD
11
12
13
14
18
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24
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APPENDIX TWO
ALTERNATIVE SITE LOCATIONS AND PHOTOGRAPHS

JACKSON HOLE AIRPORT
VOR RELOCATION

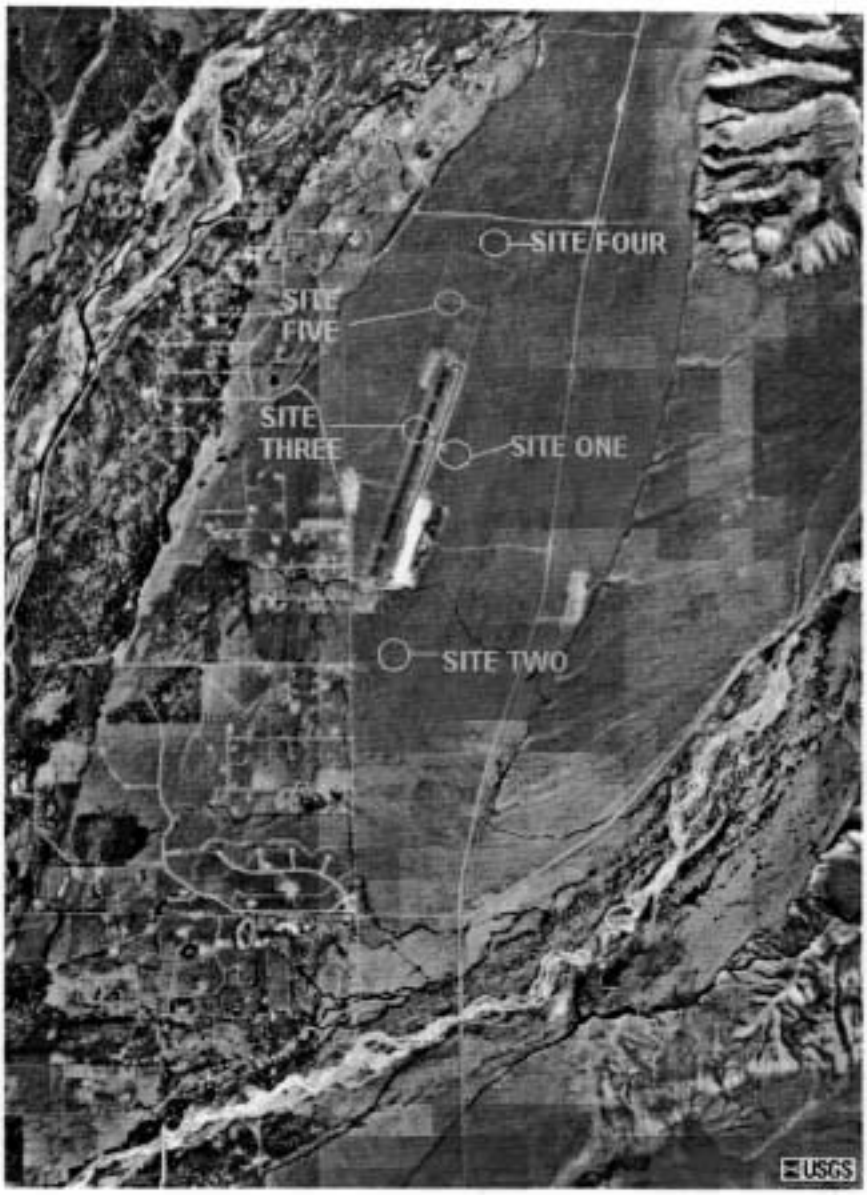

Photo 1. View to the west from Highway 89 of the airport, tower and VOR.

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Photo 2. View to the north of the existing VOR. This is also alternative Site 1 location.

Photo 3. View to the north of proposed Site 2. The airport is visible in the photo background.

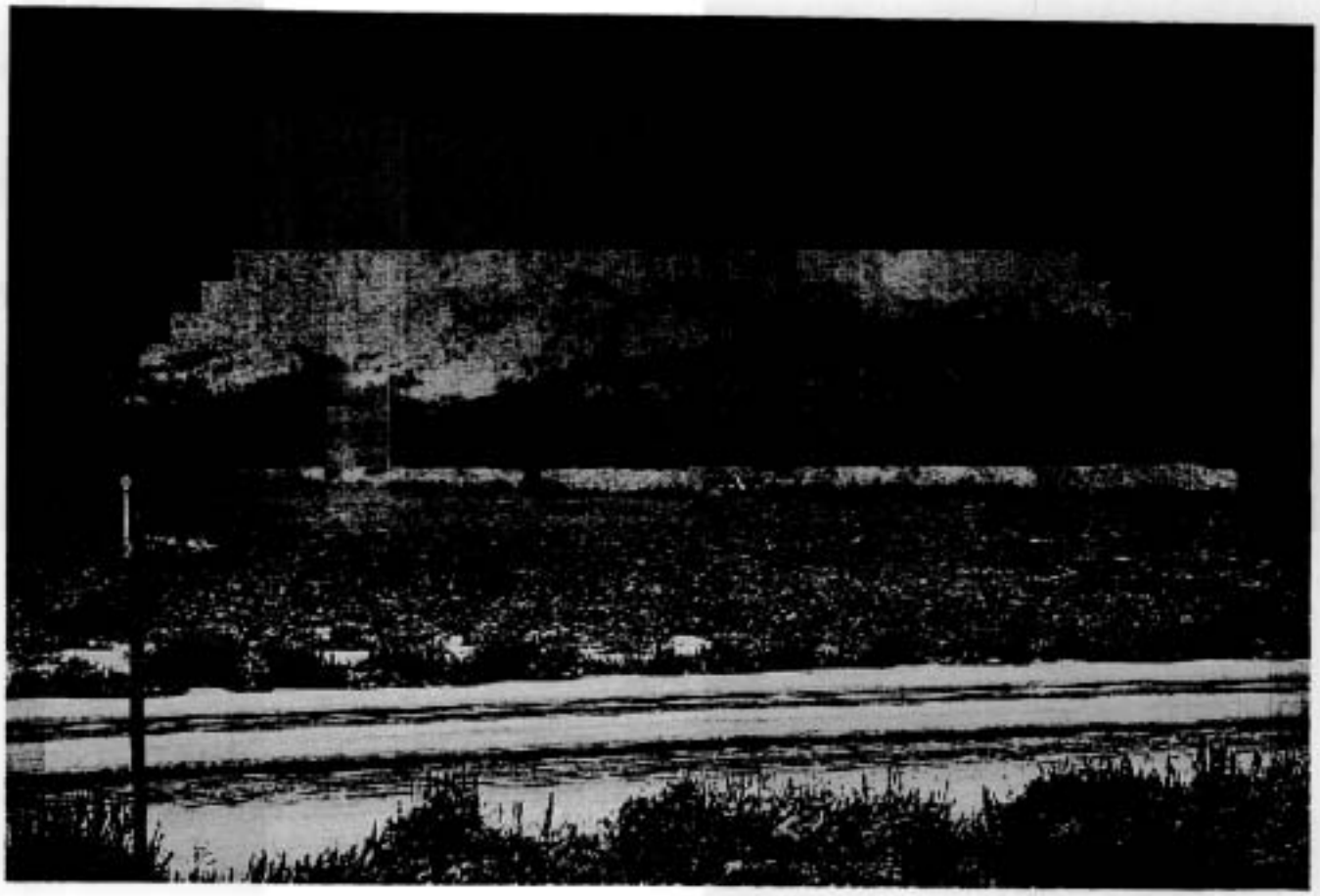
Photo 4. View to the south of proposed Site 2.

Photo 5. View to the south of proposed Site 3. The tower is visible in the photo background.

Photo 6. View to the northeast of proposed Site 3 and airport perimeter fence.

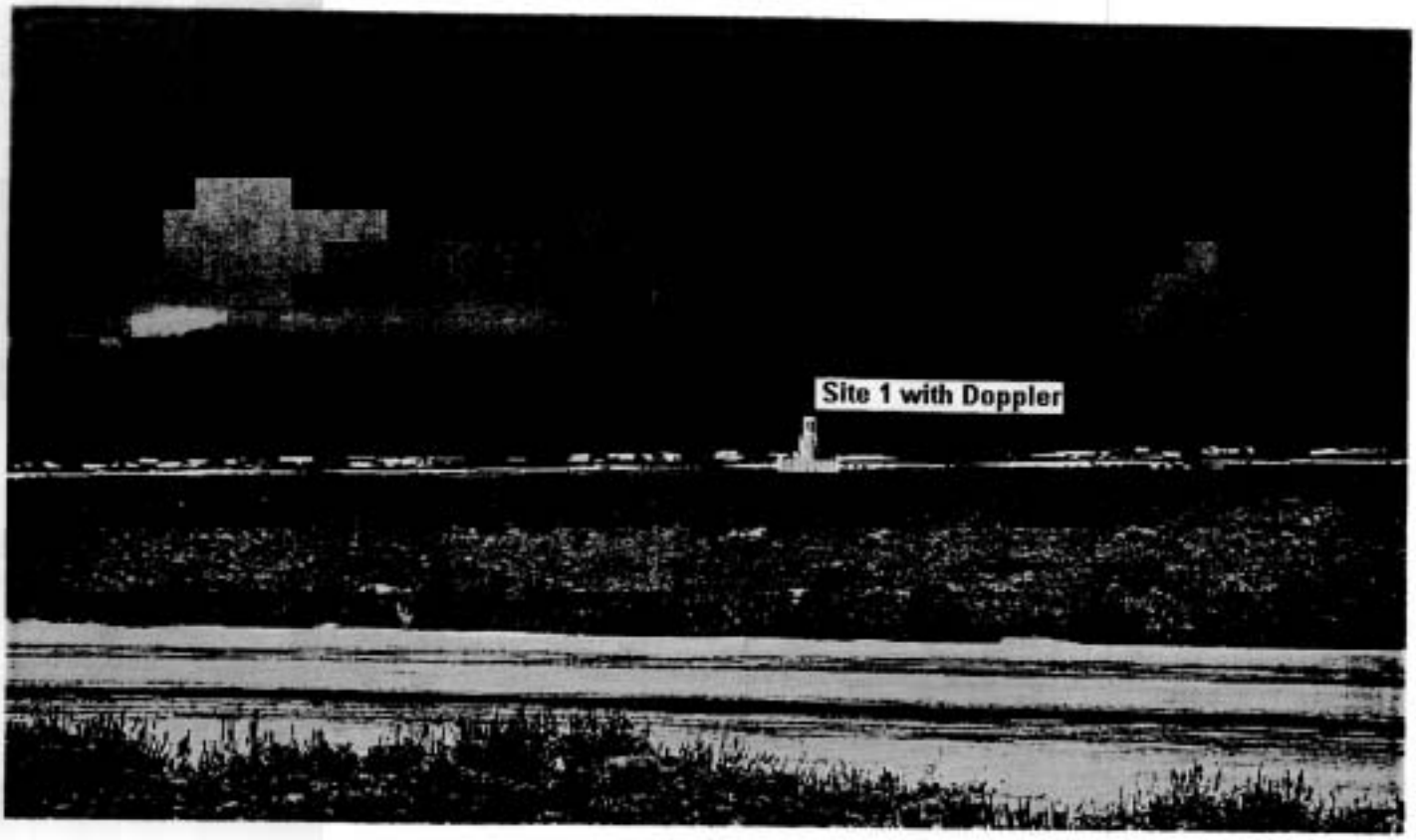
Photo 7. View to the east of proposed Site 4 and the airport perimeter fence.

Photo 8. View to the south of the northern edge of airport and proposed location of VOR. This photo was taken from Jackson Hole Ranch Road located north of the airport.



SIMULATION OF VOR AS IT WOULD LOOK AT SITE FIVE, IF TAKEN FROM PULLOUT "A". ACTUAL VOR WOULD BE PAINTED TO BLEND

SIMULATION OF A DOPPLER VOR AT SITE THREE AS TAKEN FROM PULLOUT A".



SIMULATION OF DOPPLER VOR AT SITE ONE AS TAKEN FROM PULLOUT "A".

APPENDIX THREE
VOR SITING REPORT

JACKSON VOR SITING REPORT

PROBLEM STATEMENT:

Determine if the Jackson, WY VOR should be relocated, when the building is replaced.

EXECUTIVE SUMMARY:

The VOR building for the Jackson, WY VOR has continued to leak despite many efforts to stop the leaking. The building is non-standard being composed of two fiberglass halves, which were "glued" together on site. A new building has been purchased to correct this leakage problem. The installation of this building will require approximately two months of down time for the VOR. (This is probably an optimistic estimate).

Without the VOR, there are no instrument approaches into the Jackson airport, since the VOR is necessary for the missed approach for all of the instrument approaches. There are two solutions to this problem. The first is to install a temporary VOR, develop, and flight check new procedures for it. Then replace the existing VOR at its current location. The second is to install a new VOR at a new location and cut over to it, after the installation is complete and the procedures for the new location are developed and flight checked.

The Region has a new third generation system available for the second option, if this is the option of choice. The location of the present VOR is 200 feet from the main taxiway at Jackson and 650 feet from the centerline of the runway, so if the VOR remains where it is, it needs to be Dopplerized in the near future to prevent potential critical area incursion problems.

It is virtually impossible to locate the VOR anywhere outside of the airport's leased property boundary, due to the environmental impact problems associated with Teton National Park and the astronomical cost of any private land, which is not owned by the Park. Four possible VOR sites were examined on the airport. The potential sites considered were the present site, a site at the south east corner of the airport leased property, a site west of the runway and north of the new air traffic control tower, and a site on the extended runway centerline at the north boundary of the airport. (Please see attached map). Some other siting issues, which must be taken into account, are the possible future extension of the runway to the north, the possible location of a RADAR site on the airport, and the construction of a helibase and its associated buildings for the National Park Department and the Forest Service on the airport.

Since new procedures will need to be developed for any of the four choices, this is not a significant factor in the decision process, unless the chosen location results in higher minimums or worse terrain reflections for the approaches. It then comes down to site development costs and present and future site performance expectations. All four sites will require new runs for telco and/or power, and as previously mentioned, the current site will have to be Dopplerized, if the VOR remains there. These factors and the costs associated with them have resulted in a recommendation being made to move the VOR to site number 4 (at the north boundary of the airport's leased property on the extended centerline of runway 18/36).

BACKGROUND:

The Jackson Hole Airport is located approximately 9 NM north of Jackson, WY, on land leased from the Teton National Park, and it is surrounded by Park land except for the southern part of its western boundary (along Spring Gulch Road). The land on the other side of this road is private property used for housing developments. The airport property is surrounded by an 8-foot tall wildlife fence constructed of wooden poles and square wire mesh. Not all of the airport's leased property is enclosed in this fence. Some of the land on the southeast corner is outside of it.

Jackson, WY is home to some very high visibility people, including the Vice President of the United States. It is therefore in the best interests of the FAA to do the best possible job we can on any projects associated with this airport.

Currently, there are three instrument approaches into the Jackson Hole Airport and two instrument departures. All of them utilize the Jackson VOR, either as the primary navaid for the approach or departure, or as the primary navaid for the missed approach. There is an ILS approach from the north to runway 18 and a VOR/DME or GPS approach to runway 36 and a VOR or GPS approach to the airport from the south using the VOR as the IAP (initial approach fix) and an off airport fan marker as the FAF (final approach fix).

The current building housing the Jackson VOR is a non-standard fiberglass building made by Armadillo and installed on or before 1966. The building was manufactured in two pieces, trucked to the site, and "glued" together on site. The seam runs right down the middle of the roof. This building has been plagued with leaks. Over the years, there have been many efforts to stop them, but nothing has been successful. A beehive VOR antenna shelter is located on the VOR building roof and a DME antenna is mounted on top of it. Besides the VOR, this building also houses racks and equipment for the DME, an RCAG (UHF/VHF) outlet, an RCO (VHF) outlet, and the ARMS equipment, with a codex for the ILS. This equipment and its associated antennas will have to be relocated temporarily or permanently during the VOR building replacement.

OPTIONS:

1. Do nothing.

2. Install a temporary VOR and replace the VOR building on the present site.

3. Install a new VOR building at the southeast corner of the airport's leased property.

4. Install a new VOR building in the vicinity of the glide slope.

5. Install a new VOR building on the extended runway centerline on the north boundary of the airport's leased property.

ANALYSIS OF OPTIONS:

Do nothing. This option is unacceptable, because the building continues to deteriorate. Although it is possible that it will survive another winter, it needs to be replaced in the very near future. There is ample visible evidence of the leaks inside the building.

Install a temporary VOR and replace the current VOR at its present site (site 1). The current telco cable to the existing site has only one good spare pair left. This cable is routed from the telco demarc southeast of the terminal building complex, under the buildings and the ramp north to the VOR. If a new run of telco is supplied from the present demarc, it is estimated to cost about $100K. Qwest may not agree to this due to the lack of available telco pairs in the terminal vicinity. If we have to run telco from the demarc southwest of the ATCT, the cost would probably be in the neighborhood of $85K. Power for the present site is estimated to cost approximately $2.7K.

For this option, a temporary VOR would have to be located at least 600 feet from the current VOR to protect its radiated signal during removal and replacement of the current building. This means that all of the procedures will have to be reviewed and amended, and then flight checked at the temporary VOR location. The RCAG and RCO channels would also have to be relocated during this time frame. Temporary telco and power would have to be run for these temporary locations.

The current site is also at risk due to possible future airport development. The National Park Department and the Forest Service have expressed interest in establishing a Heliport just to the south of the current VOR site. (Refer to attached map). This would be used for fire fighting and rescue efforts in the park and the surrounding National Forest land. A new hanger and an Operations/Administration building would be constructed as part of this complex. The FAA has also proposed a possible RADAR site in the same area. Either of these proposals, if carried to fruition, could possibly cause problems for the VOR.

The biggest negative of the current site remains the proximity of the taxiway and the runway to the site. The taxiway is only 200 feet from the center of the VOR antenna array. The runway is 650 feet away. The airport stated they have installed signs to protect the VOR critical area, but the signs were buried under the snow during our recent visit. The only safe and prudent solution to this situation is to Dopplerize the VOR, if it remains in its current location. This would require an additional expenditure of approximately $75K-$100K for additional construction on the counterpoise and additional installation time. This does not include the cost of the Doppler upgrade equipment, which probably amounts to another $145K+.

Relocate the VOR to the southeast corner of the airport property (site 2). This area is not currently enclosed in the airport's perimeter fence. The potential site is approximately 1,400 feet west of the extended runway centerline and 1,000 feet south of the major axis of the localizer array. Telco would have to be run to this site from the west side of the airport at an estimated cost of $40K-$50K, and power would cost approximately $4.25K.

This site appears to have a problem with TERPS issues. If it is located far enough in the southeast corner to avoid line of site issues from airport development to the north and the housing development to the west, it appears (to the untrained TERPS eye) to be at too great an angle to the runway centerline to support the VOR approaches from the south. This location also moves it closer to the hills, which are on the runway extended centerline to the south. This site is outside of the existing airport security fence. This fence would pose serious reflection problems to the south, unless it is modified. If the fence is modified, this site would probably not require a Doppler upgrade.

Relocate the VOR near the glide slope on the west side of the airport (site 3). Power and telco would have to be run to this site from a point south of the ATCT on the west boundary of the airport at an estimated cost of $4.0K for power and $25K for telco.

CRITICAL AREA ON R/W

The main drawback to this site is the proximity of the ATCT and the glide slope tower. We know from past experience, that both of these towers can have a significant impact on the radiated signal from the VOR in the far field. There is also the potential that a RADAR could be sited south of the ATCT or the Forest Service/National Park helibase sited north of the ATCT along with its hanger and Operations/Administration Building. Either of these could pose an additional reflection problem for the VOR. If the runway is extended to the north in the future, this will cause the relocation of the glide slope tower, and pose another potential threat to the performance of any VOR sited in this area. The potential for reflector caused problems may necessitate the Dopplerization of this facility to achieve acceptable performance. Reflections from the airport security fence would also have to be dealt with at this site.

Relocate the VOR on the extended runway centerline at the north boundary to the airport (site 4). Telco would have to be run from a point south of the ATCT on the west boundary of the airport at an estimated cost of $40K-$50K. Power would probably cost approximately $8.5K.

The other potential problem with this site is that of obstacle penetration into the 50 to 1 approach surface, if they ever decide to extend the runway to the north. (Airports stated that this is very unlikely judging from past history, since the Park would probably strenuously object. ("Not in our lifetime.")) The penetration would probably amount to approximately two feet, if the airport extended the runway 1,500 feet to the north. 1,500 feet is the maximum possible extension due to light lane requirements. This would leave 1,000 feet to the northern airport boundary. (The threshold of the runway is currently located 2,500 feet from this proposed site).

There appears to be the potential for some reflections off of Blacktail Butte northeast of the airport. The potential for these reflections exists **for all four of the sites being considered**. This may be the reason there is no VOR approach from the north at the present site. If there were reflections, which prevented a VOR approach from the north, and it was critical to establish one, it could be achieved by Dopplerizing site 3 or 4. The potential for this approach should be explored during the commissioning flight check of the new VOR.

Site 4 is approximately 5,000 feet to the north of the existing VOR and 650 feet to the west. According to procedures this should not have any significant effect on any of the charted usages of this VOR. From a signal in space viewpoint, it has the potential to possibly improve some of the procedures. The overall restrictions on the VOR may suffer slightly to the east north east due to the closer proximity of Blacktail Butte at the new site, but there are no charted usages in this area.

The only potential problem from a TERPS/PROCEDURES standpoint is that the ground tracks for the VOR usages will move slightly. This would amount to a maximum lateral displacement of about 1,700 feet (at 15 NM) from the current ground track for the VOR or GPS-A approach, utilizing the TETON fan marker. The VOR/DME or GPS RWY 36 approach would overlay the extended runway 36 centerline. This is the same flight path used for a straight in visual approach to runway 36. The missed approach for the ILS RWY 18 approach and the initial heading for the TETON ONE Departure would probably also be realigned with the extended runway 36 centerline. According to our environmental specialists this should not result in any significant environmental or noise impact issues.

This site, like the other sites, has issues with reflections from the airport security fence, according to our modeling program. The best location for it from a reflection standpoint is either on the runway extended centerline or very close to it. Otherwise, reflections from the fence to the east and west can eat up as much as 40-50% of our tolerance. If the VOR is not located co-linear with the north fence boundary, we may have to replace about 500 feet of north end airport fence on either side of the VOR with non-metallic mesh.

Since this site may be height sensitive, if they ever decide to extend the runway to the north, we would like to install a hybrid VOR installation. The VOR antennas would be installed on the extended runway centerline on an eight foot high "wire" mesh counterpoise. The equipment building would be installed four hundred feet away, with the DME antenna. Any antenna farm for the communication frequencies would be installed to the west of the equipment building. This should allow improved bad weather performance for the VOR antennas and almost eliminate any snow removal problems/outages. The overall building and antenna farm construction costs for all four sites would probably be roughly equivalent.

CONCLUSIONS:

Since essentially the same building design will be used at whichever site is chosen, (except for the hybrid design at site four), the main cost difference between sites will be for telco, power, possible road development, and whether the site will have to be Dopplerized to achieve satisfactory performance. Site 1 is probably the most expensive from a utilities standpoint, site 2 and 4 are probably tied for the next most expensive, and site 3 is probably the least expensive.

From a critical area/potential reflector consideration site 1 is the worst, followed by site 3 and site 2 in that order. Site 4 is the best in this category. If site 1 is selected, it should definitely be Dopplerized to ensure **SAFE** operation in the future.

From a TERPS/PROCEDURES standpoint site 4 is probably the best, followed by site 3 and site 1 in that order. Site 2 appears to be definitely substandard in this category.

RECOMMENDATIONS:

It is the recommendation of the siting engineer that site 4 be selected, because it is predicted to give the best present and future performance from a TERPS and signal in space standpoint. This location is the least likely to be impacted by future airport development or daily airport operations. While it is not the cheapest site to develop, it ties for the second cheapest development cost.

LIST OF BUILDINGS

1. TERMINAL BUILDING
2. CAR RENTAL BUILDING
3. MAINTENANCE & ARFF BUILDING
4. FBO HANGAR
5. T - HANGAR
6. FBO HANGAR
7. FBO HANGAR
8. RENTAL CAR STORAGE FACILITY
9. AIR TRAFFIC CONTROL TOWER
10. BEACON

ABBREVIATIONS

ARFF	Aircraft Rescue & Fire Fighting
ASR	Airport Surveillance Radar
ATCT	Airport Traffic Control Tower
BRL	Building Restriction Line
DGPS	Differential Global Positioning System
E	Existing
F	Future
G.S.	Glide Slope Antenna
LOC	Localizer Antenna
MALS	Medium Intensity Approach Light System
OFA	Object Free Area
PAPI	Precision Approach Path Indicator
REIL	Runway End Identifier Lights
RPZ	Runway Protection Zone
RSA	Runway Safety Area
R/W	Runway
VOR	VHF Omnirange Station

APPROVALS

Recommended:

Airport Director — Date

Approved:

Airport Board — Date

Federal Aviation Administration — Date

WIND COVERAGE

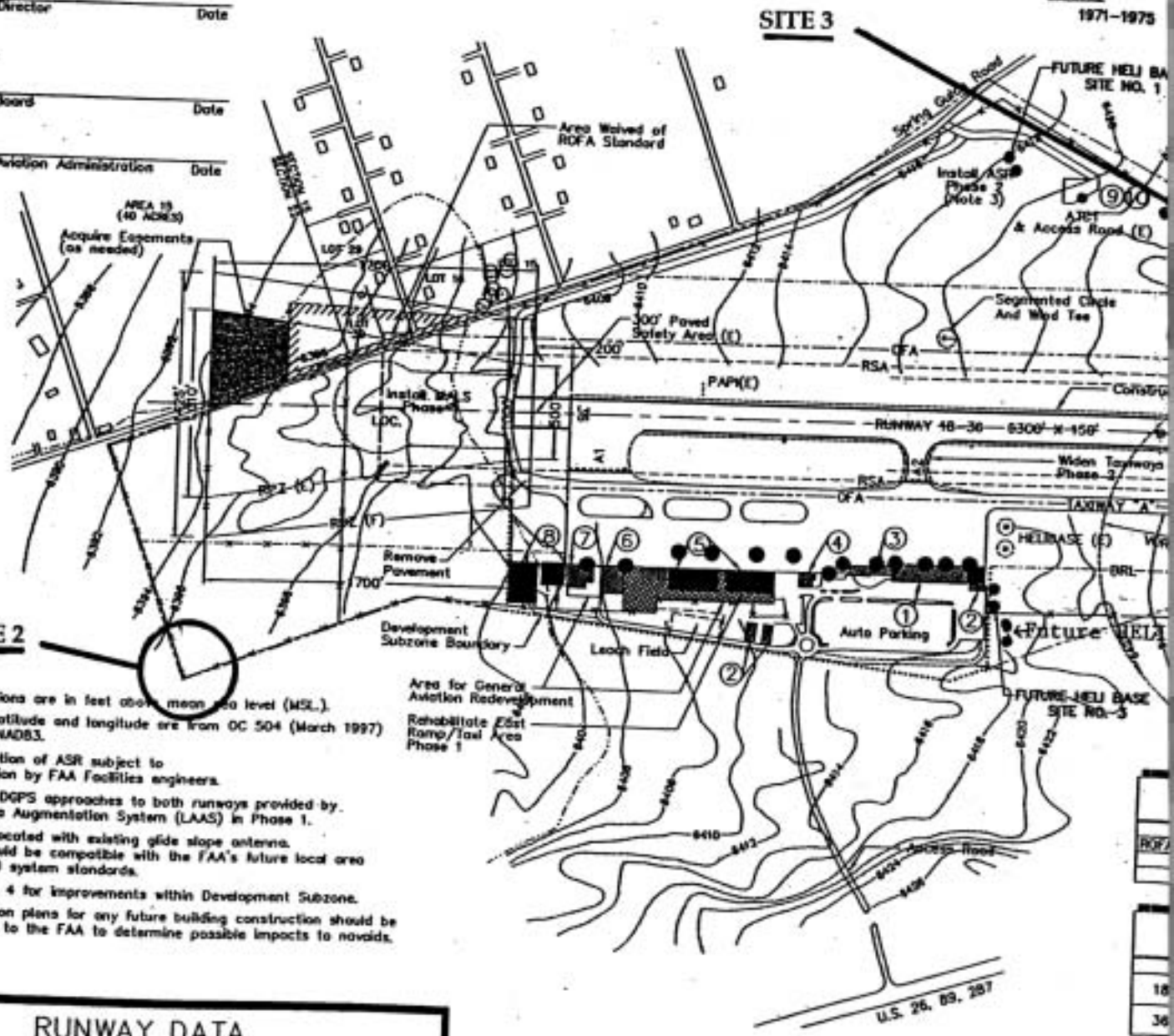
RUNWAY 18
RUNWAY 36
▲ CALMS
TOTAL

SOURCE:

U.S. WEATHE
JACKSON, W

PERIOD:

1971-1975



NOTES:

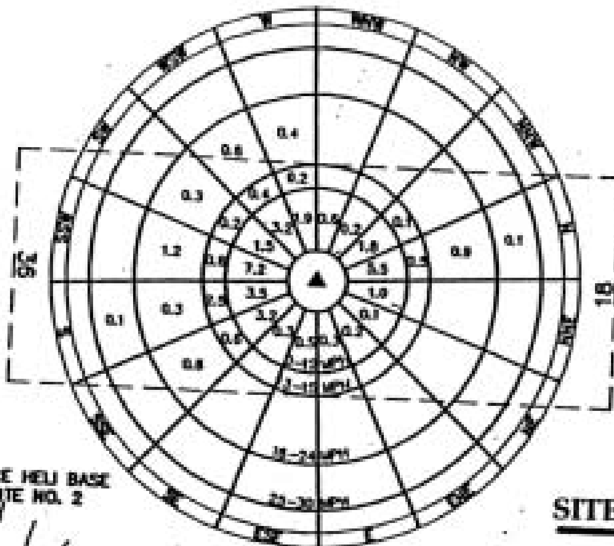
1. All elevations are in feet above mean sea level (MSL).
2. Existing latitude and longitude are from OC 504 (March 1997) and are NAD83.
3. Final location of ASR subject to confirmation by FAA Facilities engineers.
4. Precision DGPS approaches to both runways provided by Local Area Augmentation System (LAAS) in Phase 1.
5. DGPS collocated with existing glide slope antenna. DGPS should be compatible with the FAA's future local area differential system standards.
6. See sheet 4 for improvements within Development Subzone.
7. Construction plans for any future building construction should be submitted to the FAA to determine possible impacts to navaids.

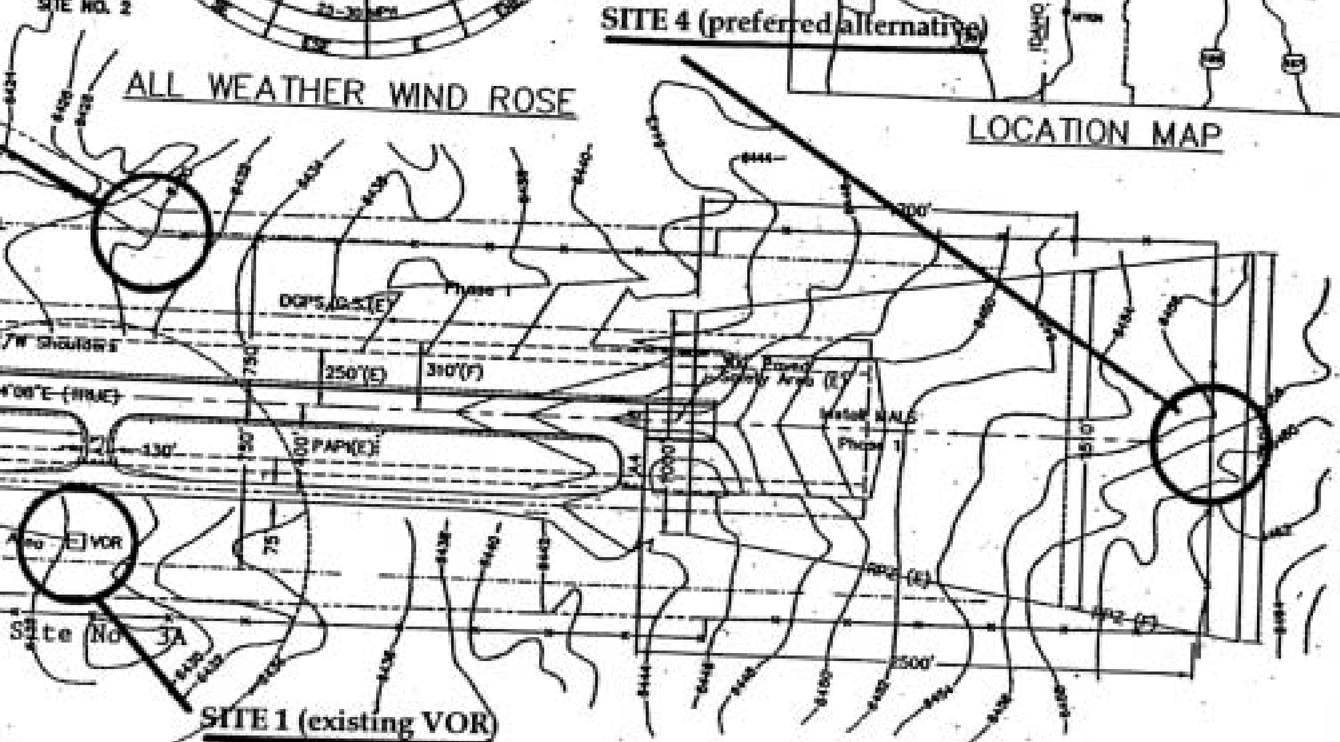
RUNWAY DATA

	RUNWAY 18-36	
	EXISTING	ULTIMATE
EFFECTIVE GRADIENT (IN %)	0.611	SAME
PAVEMENT STRENGTH (1000 LBS.) ASPHALT CONCRETE (AC)	75(S),200(D), 380(DT)	SAME
RUNWAY LIGHTING	HIRL	SAME
RUNWAY MARKING	PRECISION	SAME
NAVIGATIONAL AIDS	ILS(18)	ILS(18),DGPS(18/36)
WIND COVERAGE % (15 MPH)	98.4	SAME
VISUAL AIDS	PAPI(18/36)	PAPI(18/36)/MALS(18/36)
APPROACH SURFACES	50:1/34:1	50:1/50:1
RUNWAY LENGTH	6,300'	SAME
RUNWAY WIDTH	150'	SAME
RUNWAY SAFETY AREA WIDTH	500'	620'

AIRPORT DATA

		EXISTING	ULTIMATE
AIRPORT ELEVATION		6,445' MSL	6,447' MSL
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83)	LATITUDE	43°36'28.4"	SAME
	LONGITUDE	110°44'15.8"	SAME
MEAN MAX. TEMP. OF HOTTEST MONTH		82°F	SAME
AIRPORT AND TERMINAL NAVAIDS		VOR,ILS,DME,DGPS	SAME
AIRPORT REFERENCE CODE		C-IV	D-IV
AIRPORT WIND COVERAGE % (15 MPH)		98.4	SAME
APPROACH VISIBILITY MINIMUMS		1 MI(18)/1 MI(36)	1 MI(18/36)
MISCELLANEOUS FACILITIES		BEACON,ATCT	SAME,ASR
		WIND CONE	





NON-STANDARD CONDITIONS

STANDARD	EXISTING CONDITION	PROPOSED ACTION
S 1000' BEYOND R/W	732' PROVIDED AT SOUTH END	OBTAIN WAIVER
/W SHOULDERS	10' SHOULDERS	CONSTRUCT SHOULDERS

RUNWAY END DATA

WAY	EXISTING	ULTIMATE	EXIST. ELEV.	ULT. ELEV.
TITUDE	43°36'55.73"	SAME	6,446.7'	SAME
GITUDE	110°44'01.57"	SAME		
TUDE	43°35'57.10"	SAME	6,408.9'	SAME
GITUDE	110°44'30.15"	SAME		

LEGEND

	EXISTING	FUTURE
		SAME
(ARP)	•	•
(BRL)		SAME
UNDARY		SAME
	8400	SAME
		SAME
	A3	SAME
G SIGN (RDR)	•	SAME

GRAPHIC SCALE

400 0 200 400 800

in feet

Annual Rate of Change = 3.2 Min/Year

The preparation of this plan was financed in part through a planning grant from the Federal Aviation Administration as provided under Section 505 of the Airport and Airway Improvement Act of 1982, as amended. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this plan by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable in accordance with appropriate public laws.

NO.	DATE	REVISION	BY	APP.
2	1-2-01	EXPAND GENERAL AVIATION APRON	R.E.A.	
1	5-30-00	RECORD DRAWING AIP. 3-56-0014-21,22,23,24 AND 25 REVISIONS MADE BY RAYTHEON, CIVIL DIVISION	R.E.A.	

JACKSON HOLE AIRPORT
JACKSON, WYOMING

AIRPORT LAYOUT PLAN

P&D Aviation

DESIGNED: DPS | CHECKED: REA

SHEET 1 OF 10

APPENDIX FOUR
COMPUTER DATABASE
SEARCH RESULTS

EDR NEPACheck®

Site 4
Jackson Hole Airport
Teton County, WY 83001

Inquiry Number: 767677.1s

April 23, 2002

Environmental Data Resources, Inc.

The Source For Environmental Risk Management Data

3530 Post Road
Southport, Connecticut 06490

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EDR NEPACheck® DESCRIPTION

The National Environmental Policy Act of 1969 (NEPA) requires that Federal agencies include in their decision-making processes appropriate and careful consideration of all environmental effects and actions, analyze potential environmental effects of proposed actions and their alternatives for public understanding and scrutiny, avoid or minimize adverse effects of proposed actions, and restore and enhance environmental quality as much as possible.

The EDR NEPACheck provides information which may be used, in conjunction with additional research, to determine whether a proposed site or action will have significant environmental effect.

The report provides maps and data for the following items (where available). Search results are provided in the Map Findings Summary on page 2 of this report.

	Regulation
Natural Areas Map	
• Federal Lands Data:	
- Officially designated wilderness areas	47 CFR 1.1307(1)
- Officially designated wildlife preserves, sanctuaries and refuges	47 CFR 1.1307(2)
- Wild and scenic rivers	40 CFR 6.302(e)
- Fish and Wildlife	40 CFR 6.302
• Threatened or Endangered Species, Fish and Wildlife, Critical Habitat Data (where available)	47 CFR 1.1307(3); 40 CFR 6.302
Historic Sites Map	
• National Register of Historic Places	47 CFR 1.1307(4); 40 CFR 6.302
• State Historic Places (where available)	
Flood Plain Map	
• National Flood Plain Data (where available)	47 CFR 1.1307(6); 40 CFR 6.302
Wetlands Map	
• National Wetlands Inventory Data (where available)	47 CFR 1.1307(7); 40 CFR 6.302
FCC & FAA Map	
• FCC antenna/tower sites, AM Radio Towers, FAA Markings and Obstructions, AM Radio Interference Zones, Airports, Topographic gradient	47 CFR 1.1307(8)

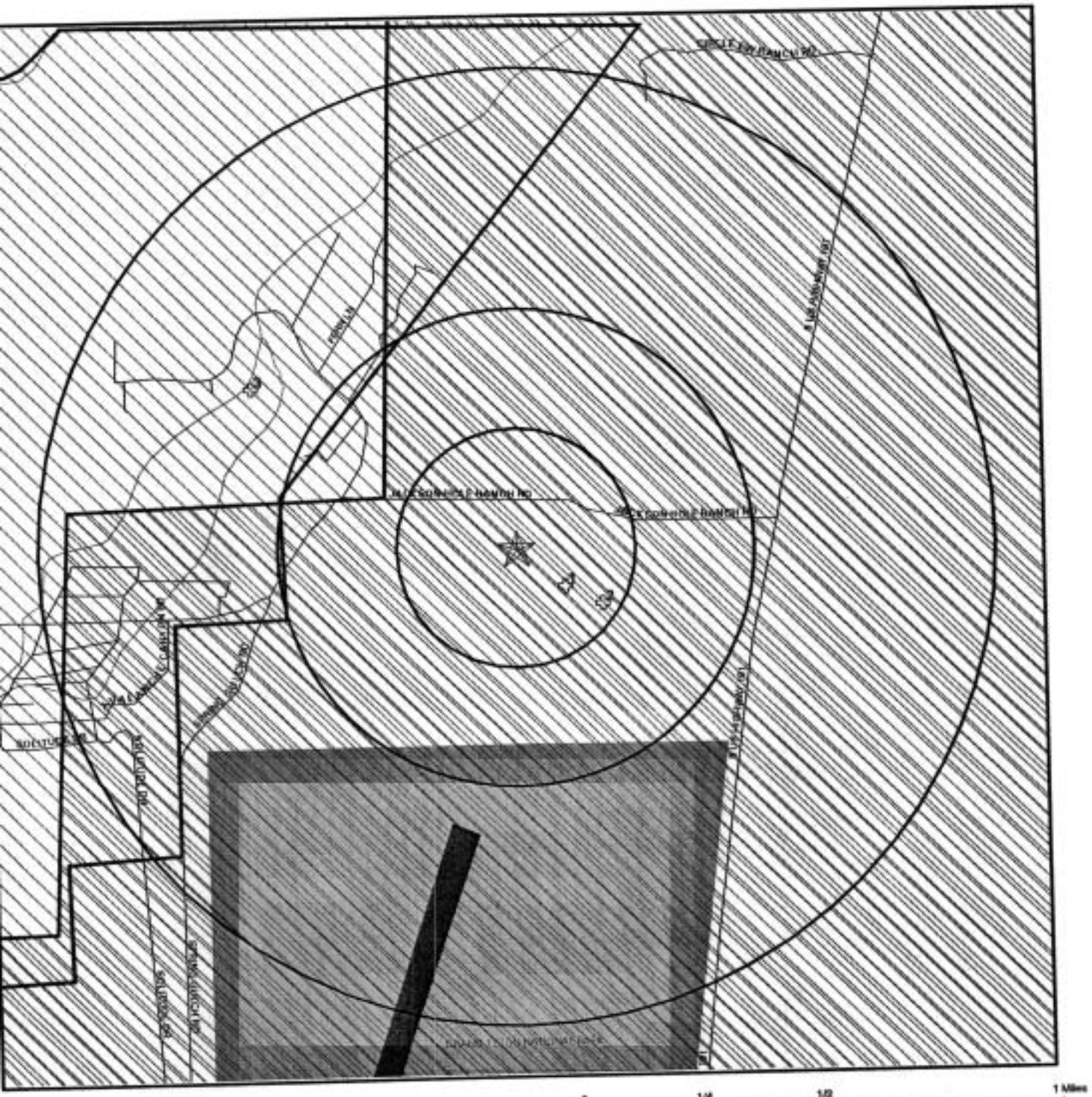
Key Contacts and Government Records Searched

MAP FINDINGS SUMMARY

The databases searched in this report are listed below. Database descriptions and other agency contact information is contained in the Key Contacts and Government Records Searched section on page 26 of this report.

Database	Search Distance (Miles)	Item within Search Distance	Item within 1/8 mile of Target Property
WY Management Areas	1.00	YES	YES
US Federal Lands	1.00	YES	YES
WY Historic Sites	1.00	NO	NO
National Register Hist. Places	1.00	NO	NO
FLOODPLAIN	1.00	NO	NO
NWI	1.00	YES	NO
FCC Cellular	1.00	NO	NO
FCC Antenna	1.00	NO	NO
FCC Tower	1.00	YES	NO
FCC AM Tower	1.00	NO	NO
FAA DOF	1.00	YES	NO

Natural Areas Map



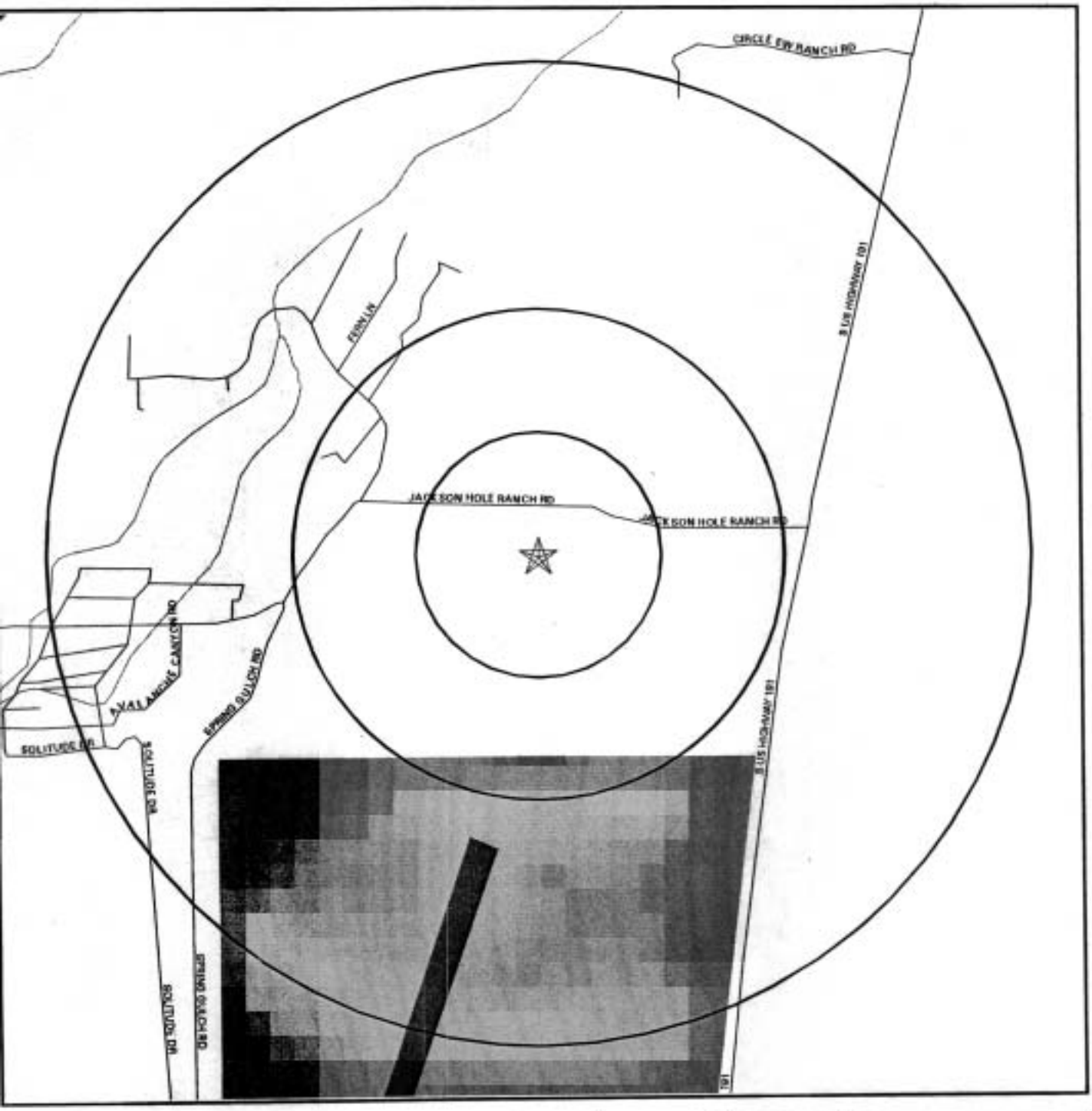
- Target Property
- Roads
- County Boundary
- Waterways
- Water
- Airports
- Locations
- Federal Areas
- Federal Linear Features
- State Areas
- State Linear Features

TARGET PROPERTY:	Site 4	CUSTOMER:	FAA	
ADDRESS:	Jackson Hole Airport	CONTACT:	Joseph Gibbens	
CITY/STATE/ZIP:	Teton County WY 83001	INQUIRY #:	767677.1s	
LAT/LONG:	43.6238 / 110.7305	DATE:	April 23, 2002	TC767677.1s Page 3 of 31

NATURAL AREAS MAP FINDINGS

Map ID Direction Distance Distance (ft.)			EDR ID Database
1 North 0-1/8 mi 0	Name: ID: State FIPS: Feature:	Grand Teton National Park 5918 56 National Park NPS	US0005918 US Federal Lands
2 North 0-1/8 mi 0	Primary Area: Secondary Area: Type: Acreage: Area Code: Nat. Forest Name: Source Map: Map Code: Comment:	GRAND TETON NATIONAL PARK Not reported NPS NATIONAL PARK 224053 M82USB69WYUS,M90USB65WYUS Not reported Not reported 4 Not reported	WY10000055 WY Management Areas
3 NW 1/4-1/2 mi 2412	Primary Area: Secondary Area: Type: Acreage: Area Code: Nat. Forest Name: Source Map: Map Code: Comment:	Not reported Not reported Not reported 0 Not reported Not reported Not reported 0 Not reported	WY10000078 WY Management Areas

Historic Sites Map



★ Target Property
Streets
County Boundary
Waterways
Water
Airports

◆ Historic Sites
Federal Historic Areas
State Historic Areas
Scenic Trail

0 1/4 1/2 1 Miles

TARGET PROPERTY:	Site 4	CUSTOMER:	FAA	
ADDRESS:	Jackson Hole Airport	CONTACT:	Joseph Gibbens	
CITY/STATE/ZIP:	Teton County WY 83001	INQUIRY #:	767677.1s	
LAT/LONG:	43.6238 / 110.7305	DATE:	April 23, 2002	TC767677.1s Page 5 of 31

HISTORIC SITES MAP FINDINGS

Map ID Direction Distance Distance (ft.)	EDR ID Database

No mapped sites were found in EDR's search of available government records within the search radius around the target property.

UNMAPPABLE HISTORIC SITES

Due to poor or inadequate address information, the following sites were not mapped:

		Status EDR ID Database
Name:	4 LAZY F RANCH	Unmappable
Address:	GRAND TETON N PARK	WY10000336
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1142	
Date Added:	04/23/90	
Designation:	Not reported	
County:	TETON	

Name:	5 SQUIRREL MEADOWS GUARD STATION	Unmappable
Address:	TARGHEE NAT FOREST	WY10000359
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	Not reported	
Date Added:	10/04/90	
Designation:	Not reported	
County:	TETON	

Name:	AMK RANCH	Unmappable
Address:	GRAND TETON N PARK	WY10000337
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE0968	
Date Added:	04/23/90	
Designation:	Not reported	
County:	TETON	

Name:	BAR B C DUDE RANCH (BAR B C HISTORIC DISTRICT)	Unmappable
Address:	GRAND TETON N PARK	WY10000339
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE0915	
Date Added:	04/23/90	
Designation:	Not reported	
County:	TETON	

Name:	CASCADE CANYON BARN	Unmappable
Address:	GRAND TETON N PARK	WY10000431
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1191	
Date Added:	08/18/98	
Designation:	MPS	
County:	TETON	

Name:	CHAMBERS, ANDY HOMESTEAD	Unmappable
Address:	GRAND TETON N PARK	WY10000341
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE0995	
Date Added:	04/23/90	
Designation:	Not reported	
County:	TETON	

UNMAPPABLE HISTORIC SITES

Due to poor or inadequate address information, the following sites were not mapped:

		Status EDR ID Database
Name:	CHAPEL OF THE TRANSFIGURATION	Unmappable WY10000138 WY Historic Sites
Address:	MOOSE	
Owner Status:	PRIVATE	
Site Number:	48TE1083	
Date Added:	04/10/80	
Designation:	Not reported	
County:	TETON	
Name:	CUNNINGHAM CABIN	Unmappable WY10000069 WY Historic Sites
Address:	S OF MORAN JUNCTION	
Owner Status:	FEDERAL (NPS)	
Site Number:	48TE902	
Date Added:	10/02/73	
Designation:	Not reported	
County:	TETON	
Name:	DEATH CANYON BARN	Unmappable WY10000432 WY Historic Sites
Address:	GRAND TETON N PARK	
Owner Status:	FEDERAL (NPS)	
Site Number:	48TE1193	
Date Added:	08/25/98	
Designation:	MPS	
County:	TETON	
Name:	DIAMOND DUDE RANCH DINING HALL	Unmappable WY10000433 WY Historic Sites
Address:	GRAND TETON N PARK	
Owner Status:	FEDERAL (NPS)	
Site Number:	48TE1024	
Date Added:	08/18/98	
Designation:	MPS	
County:	TETON	
Name:	Expanded	Unmappable WY10000348 WY Historic Sites
Address:	GRAND TETON N PARK	
Owner Status:	FEDERAL (NPS)	
Site Number:	48TE1143	
Date Added:	08/24/98	
Designation:	Not reported	
County:	TETON	
Name:	GAP PUCHE CABIN	Unmappable WY10000353 WY Historic Sites
Address:	EAST OF KELLY	
Owner Status:	USFS	
Site Number:	48TE1023	
Date Added:	06/18/90	
Designation:	Not reported	
County:	TETON	

UNMAPPABLE HISTORIC SITES

Due to poor or inadequate address information, the following sites were not mapped:

		Status EDR ID Database
Name:	GERALDINE LUCAS HOMESTEAD/FABIAN PLACE HISTORIC DISTRICT	Unmappable
Address:	GRAND TETON N PARK	WY10000437
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1146	
Date Added:	08/24/98	
Designation:	MPS	
County:	TETON	

Name:	HUCKLEBERRY MOUNTAIN FIRE LOOKOUT	Unmappable
Address:	TETON NAT FOREST	WY10000173
Owner Status:	FEDERAL (USFS)	WY Historic Sites
Site Number:	48TE910	
Date Added:	07/10/83	
Designation:	Not reported	
County:	TETON	

Name:	HUNTER HEREFORD RANCH HISTORIC DISTRICT	Unmappable
Address:	GRAND TETON N PARK	WY10000435
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1158	
Date Added:	08/24/98	
Designation:	MPS	
County:	TETON	

Name:	JACKSON LAKE RANGER STATION	Unmappable
Address:	GRAND TETON N PARK	WY10000342
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1150	
Date Added:	04/23/90	
Designation:	Not reported	
County:	TETON	

Name:	JENNY LAKE BOAT CONCESSION HISTORIC DISTRICT	Unmappable
Address:	GRAND TETON N PARK	WY10000436
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1149	
Date Added:	08/24/98	
Designation:	MPS	
County:	TETON	

Name:	JENNY LAKE RANGER STATION HISTORIC DISTRICT	Unmappable
Address:	GRAND TETON N PARK	WY10000343
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1139	
Date Added:	04/23/90	
Designation:	Not reported	
County:	TETON	

UNMAPPABLE HISTORIC SITES

Due to poor or inadequate address information, the following sites were not mapped:

Status
EDR ID
Database

Name: KIMMEL KABINS (HISTORIC DISTRICT)
Address: GRAND TETON N PARK
Owner Status: FEDERAL (NPS)
Site Number: 48TE1141
Date Added: 04/23/90
Designation: Not reported
County: TETON

Unmappable
WY10000344
WY Historic Sites

Name: LAKE HOTEL
Address: YELLOWSTONE N PARK
Owner Status: FEDERAL (NPS)
Site Number: 48YE676
Date Added: 04/15/91
Designation: Not reported
County: TETON

Unmappable
WY10000360
WY Historic Sites

Name: LEEK'S LODGE
Address: GRAND TETON NATIONAL PARK
Owner Status: FEDERAL (NPS)
Site Number: 48TE900
Date Added: 09/01/75
Designation: Not reported
County: TETON

Unmappable
WY10000088
WY Historic Sites

Name: LEIGH LAKE RANGER PATROL CABIN
Address: GRAND TETON N PARK
Owner Status: FEDERAL (NPS)
Site Number: 48TE1188
Date Added: 04/23/90
Designation: Not reported
County: TETON

Unmappable
WY10000345
WY Historic Sites

Name: MANGES CABIN
Address: GRAND TETON N PARK
Owner Status: FEDERAL (NPS)
Site Number: 48TE0921
Date Added: 08/19/98
Designation: MPS
County: TETON

Unmappable
WY10000438
WY Historic Sites

Name: MENOR'S FERRY
Address: MOOSE
Owner Status: FEDERAL (NPS)
Site Number: 48TE901
Date Added: 04/16/69
Designation: Not reported
County: TETON

Unmappable
WY10000022
WY Historic Sites

UNMAPPABLE HISTORIC SITES

Due to poor or inadequate address information, the following sites were not mapped:

		Status EDR ID Database
Name:	MILLER CABIN	Unmappable WY10000023 WY Historic Sites
Address:	JACKSON	
Owner Status:	FEDERAL (USFW)	
Site Number:	48TE903	
Date Added:	04/16/69	
Designation:	Not reported	
County:	TETON	
Name:	MOOSE ENTRANCE KIOSK	Unmappable WY10000346 WY Historic Sites
Address:	GRAND TETON N PARK	
Owner Status:	FEDERAL (NPS)	
Site Number:	48TE0984	
Date Added:	04/23/90	
Designation:	Not reported	
County:	TETON	
Name:	MORAN BAY PATROL CABIN	Unmappable WY10000439 WY Historic Sites
Address:	GRAND TETON N PARK	
Owner Status:	FEDERAL (NPS)	
Site Number:	48TE1154	
Date Added:	08/25/98	
Designation:	MPS	
County:	TETON	
Name:	MORMON ROW HISTORIC DISTRICT	Unmappable WY10000421 WY Historic Sites
Address:	MOOSE	
Owner Status:	FEDERAL/PRIVATE	
Site Number:	48TE1444	
Date Added:	06/06/97	
Designation:	Not reported	
County:	TETON COUNTY	
Name:	MURIE RANCH	Unmappable WY10000347 WY Historic Sites
Address:	GRAND TETON N PARK	
Owner Status:	FEDERAL (NPS)	
Site Number:	48TE1143	
Date Added:	04/23/90	
Designation:	Not reported	
County:	TETON	
Name:	OLD ADMINISTRATIVE AREA HISTORIC DISTRICT	Unmappable WY10000338 WY Historic Sites
Address:	GRAND TETON N PARK	
Owner Status:	FEDERAL (NPS)	
Site Number:	48TE1137	
Date Added:	04/23/90	
Designation:	Not reported	
County:	TETON	

UNMAPPABLE HISTORIC SITES

Due to poor or inadequate address information, the following sites were not mapped:

		Status EDR ID Database
Name:	OLD FAITHFUL HISTORIC DISTRICT	Unmappable
Address:	YELLOWSTONE Nt PARK	WY10000167
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48YE682	
Date Added:	11/01/82	
Designation:	Not reported	
County:	TETON	

Name:	OLD FAITHFUL INN	Unmappable
Address:	YELLOWSTONE	WY10000067
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48YE517	
Date Added:	07/23/73	
Designation:	NHL	
County:	TETON	

Name:	RAMSHORN DUDE RANCH LODGE	Unmappable
Address:	GRAND TETON N PARK	WY10000440
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1165	
Date Added:	08/19/98	
Designation:	MPS	
County:	TETON	

Name:	ROSENCRANS CABIN HISTORIC DIST	Unmappable
Address:	E OF MORAN JCT.	WY10000144
Owner Status:	FEDERAL (USFS)	WY Historic Sites
Site Number:	48TE971	
Date Added:	08/06/80	
Designation:	Not reported	
County:	TETON	

Name:	ST. JOHN'S EPISCOPAL CHURCH & RECTORY	Unmappable
Address:	JACKSON (GF)	WY10000121
Owner Status:	PRIVATE	WY Historic Sites
Site Number:	48TE912	
Date Added:	12/01/78	
Designation:	Not reported	
County:	TETON	

Name:	STRING LAKE COMFORT STATION	Unmappable
Address:	GRAND TETON N PARK	WY10000349
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1187	
Date Added:	04/23/90	
Designation:	Not reported	
County:	TETON	

UNMAPPABLE HISTORIC SITES

Due to poor or inadequate address information, the following sites were not mapped:

		Status EDR ID Database
Name:	THE BRINKERHOFF	Unmappable
Address:	GRAND TETON N PARK	WY10000340
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1184	
Date Added:	04/23/90	
Designation:	Not reported	
County:	TETON	

Name:	THE HIGHLANDS HISTORIC DISTRICT	Unmappable
Address:	GRAND TETON N PARK	WY10000434
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1144	
Date Added:	08/19/98	
Designation:	MPS	
County:	TETON	

Name:	TRIANGLE X BARN	Unmappable
Address:	GRAND TETON N PARK	WY10000441
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE0967	
Date Added:	08/19/98	
Designation:	MPS	
County:	TETON	

Name:	UPPER GRANITE CANYON PATROL CABIN	Unmappable
Address:	GRAND TETON N PARK	WY10000442
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1136	
Date Added:	08/19/98	
Designation:	MPS	
County:	TETON	

Name:	VAN VLECK HOUSE AND BARN (JEDIDIAH'S HOUSE OF SOURDOUGH)	Unmappable
Address:	JACKSON	WY10000406
Owner Status:	PRIVATE	WY Historic Sites
Site Number:	48TE1317	
Date Added:	09/15/95	
Designation:	Not reported	
County:	TETON	

Name:	WHITE GRASS DUDE RANCH	Unmappable
Address:	GRAND TETON N PARK	WY10000350
Owner Status:	FEDERAL (NPS)	WY Historic Sites
Site Number:	48TE1004	
Date Added:	04/23/90	
Designation:	Not reported	
County:	TETON	

UNMAPPABLE HISTORIC SITES

Due to poor or inadequate address information, the following sites were not mapped:

Status
EDR ID
Database

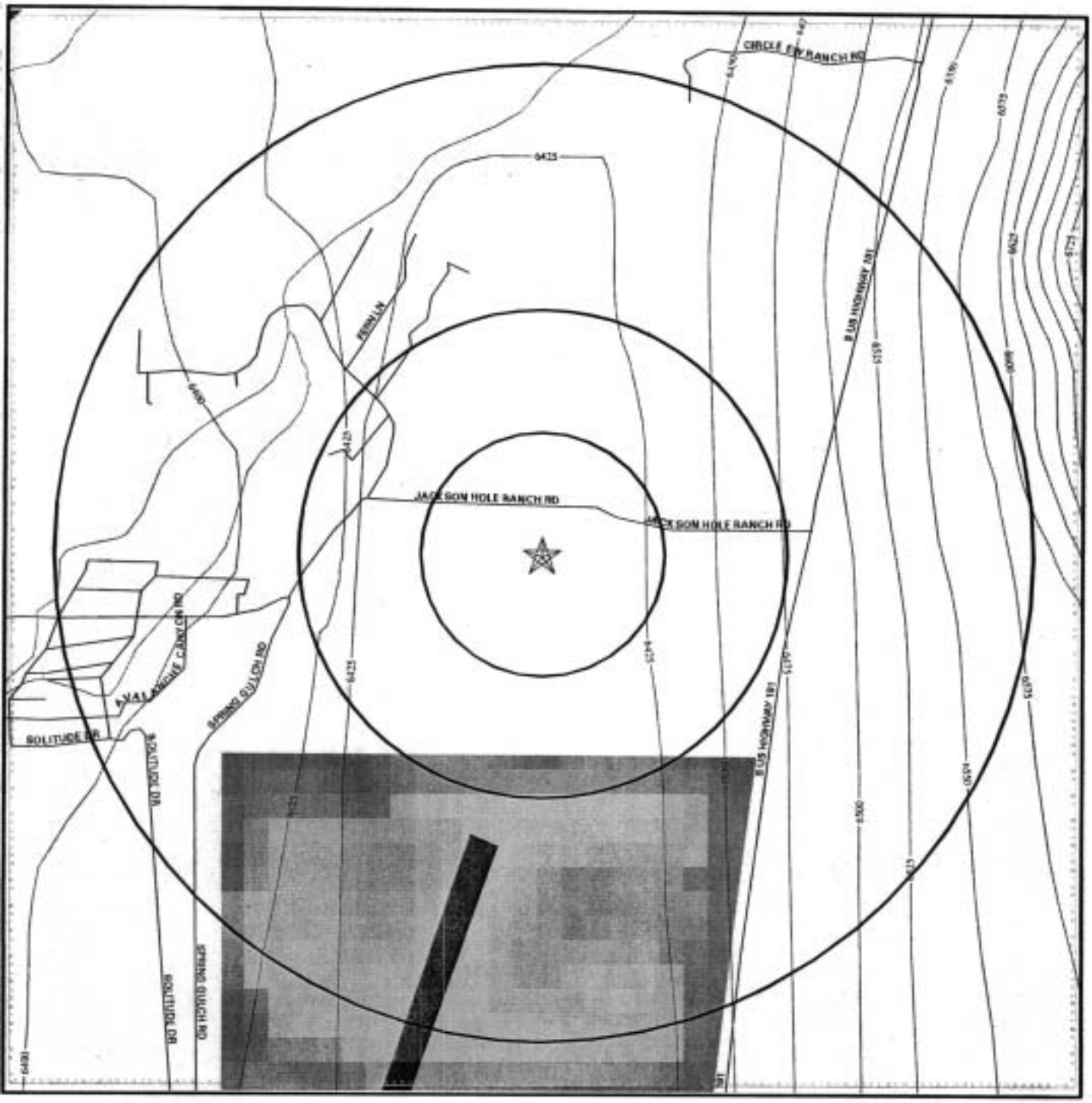
Name: WHITE GRASS RANGER STATION HISTORIC DISTRICT
Address: GRAND TETON N PARK
Owner Status: FEDERAL (NPS)
Site Number: 48TE1138
Date Added: 04/23/90
Designation: Not reported
County: TETON

Unmappable
WY10000351
WY Historic Sites

Name: WORT HOTEL
Address: JACKSON
Owner Status: PRIVATE
Site Number: 48TE1216
Date Added: 12/09/99
Designation: Not reported
County: TETON

Unmappable
WY10000446
WY Historic Sites

Flood Plain Map



Major Roads
Contour Lines
Waterways
County Boundary
Airports
Power Lines
Pipe Lines
Fault Lines
Water
100-year flood zone
500-year flood zone
Electronic FEMA data available
Electronic FEMA data not available

0 1/4 1/2 1 Miles

N

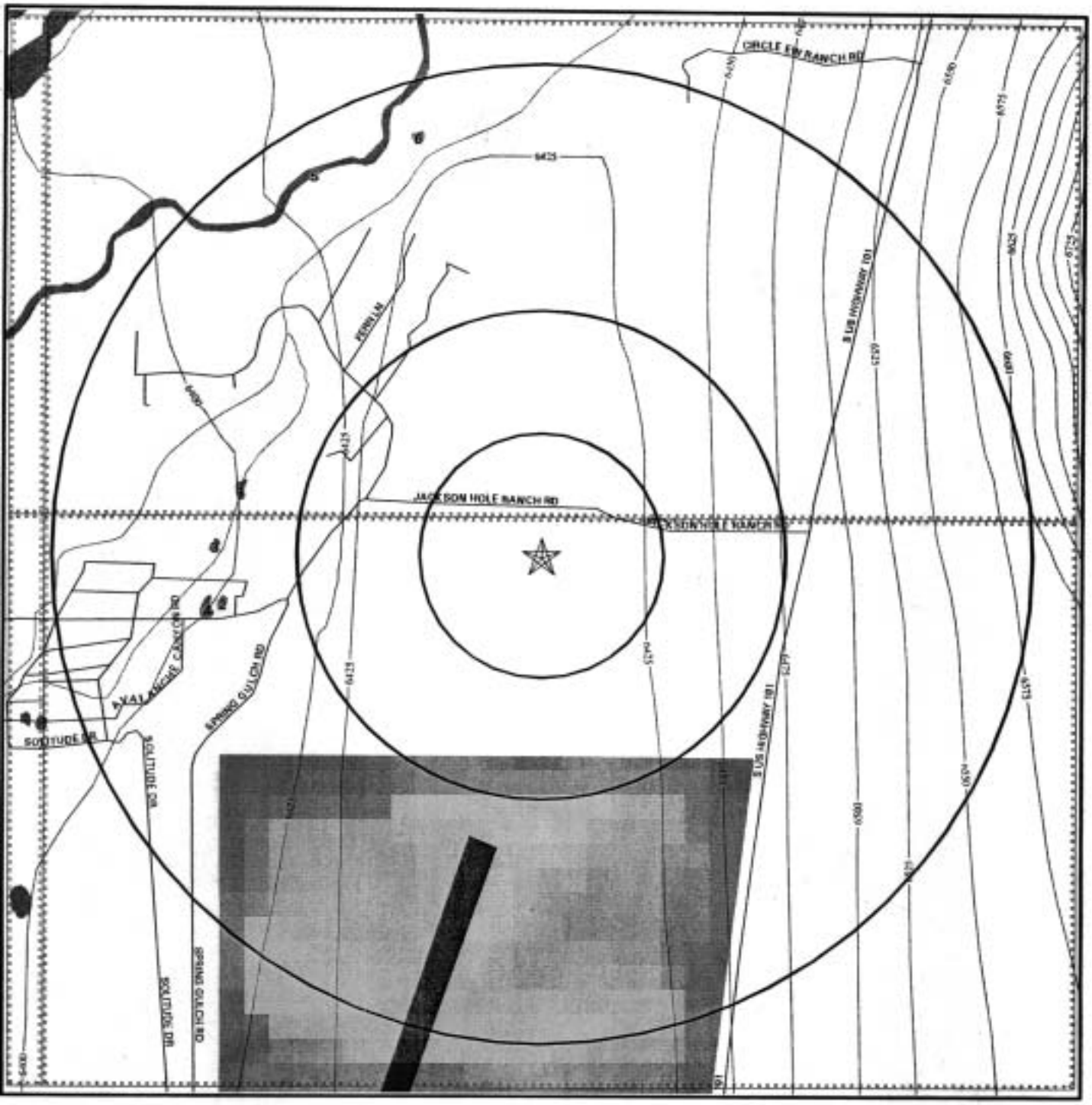
TARGET PROPERTY:	Site 4	CUSTOMER:	FAA	
ADDRESS:	Jackson Hole Airport	CONTACT:	Joseph Gibbens	
CITY/STATE/ZIP:	Teton County WY 83001	INQUIRY #:	767677.1s	
LAT/LONG:	43.6238 / 110.7305	DATE:	April 23, 2002	TC767677.1s Page 15 of 31

FLOOD PLAIN MAP FINDINGS

Source: FEMA Q3 Flood Data

County	FEMA flood data electronic coverage
TETON, WY	NO
Flood Plain panel at target property:	None Reported
Additional Flood Plain panel(s) in search area:	None Reported

National Wetlands Inventory Map



Major Roads
Contour Lines
Waterways
County Boundary
Airports
Power Lines
Pipe Lines
Fault Lines
Water
Wetlands
Electronic NWI data available
Electronic NWI data not available

0 1/4 1/2 1 Miles

TARGET PROPERTY:	Site 4	CUSTOMER:	FAA	
ADDRESS:	Jackson Hole Airport	CONTACT:	Joseph Gibbens	
CITY/STATE/ZIP:	Teton County WY 83001	INQUIRY #:	767677.1s	
LAT/LONG:	43.6238 / 110.7305	DATE:	April 23, 2002	TC767677.1s Page 17 of 31

WETLANDS MAP FINDINGS

Source: Fish and Wildlife Service NWI data

NWI hardcopy map at target property: Gros Ventre Junction
Additional NWI hardcopy map(s) in search area:
Moose

Map ID Direction Distance Distance (ft.)	Code and Description*	Database
1 West 1/2-1 mi 3256	PABG [P] Palustrine, [AB] Aquatic Bed, [G] Intermittently Exposed	NWI
2 West 1/2-1 mi 3411	PEMC [P] Palustrine, [EM] Emergent, [C] Seasonally Flooded	NWI
3 West 1/2-1 mi 3466	PABGx [P] Palustrine, [AB] Aquatic Bed, [G] Intermittently Exposed, [x] Excavated	NWI
4 West 1/2-1 mi 3584	PABGh [P] Palustrine, [AB] Aquatic Bed, [G] Intermittently Exposed, [h] Diked/Impounded	NWI
5 NW 1/2-1 mi 4580	R3UBH [R] Riverine, [3] Upper Perennial, [UB] Unconsolidated Bottom, [H] Permanently Flooded	NWI
6 NNW 1/2-1 mi 4637	PABGx [P] Palustrine, [AB] Aquatic Bed, [G] Intermittently Exposed, [x] Excavated	NWI

*See Wetland Classification System for additional information.

WETLANDS CLASSIFICATION SYSTEM

National Wetland Inventory Maps are produced by the U.S. Fish and Wildlife Service, a sub-department of the U.S. Department of the Interior. In 1974, the U.S. Fish and Wildlife Service developed a criteria for wetland classification with four long range objectives:

- to describe ecological units that have certain homogeneous natural attributes,
- to arrange these units in a system that will aid decisions about resource management,
- to furnish units for inventory and mapping, and
- to provide uniformity in concepts and terminology throughout the U.S.

High altitude infrared photographs, soil maps, topographic maps and site visits are the methods used to gather data for the productions of these maps. In the infrared photos, wetlands appear as different colors and these wetlands are then classified by type. Using a hierarchical classification, the maps identify wetland and deepwater habitats according to:

- system
- subsystem
- class
- subclass
- modifiers

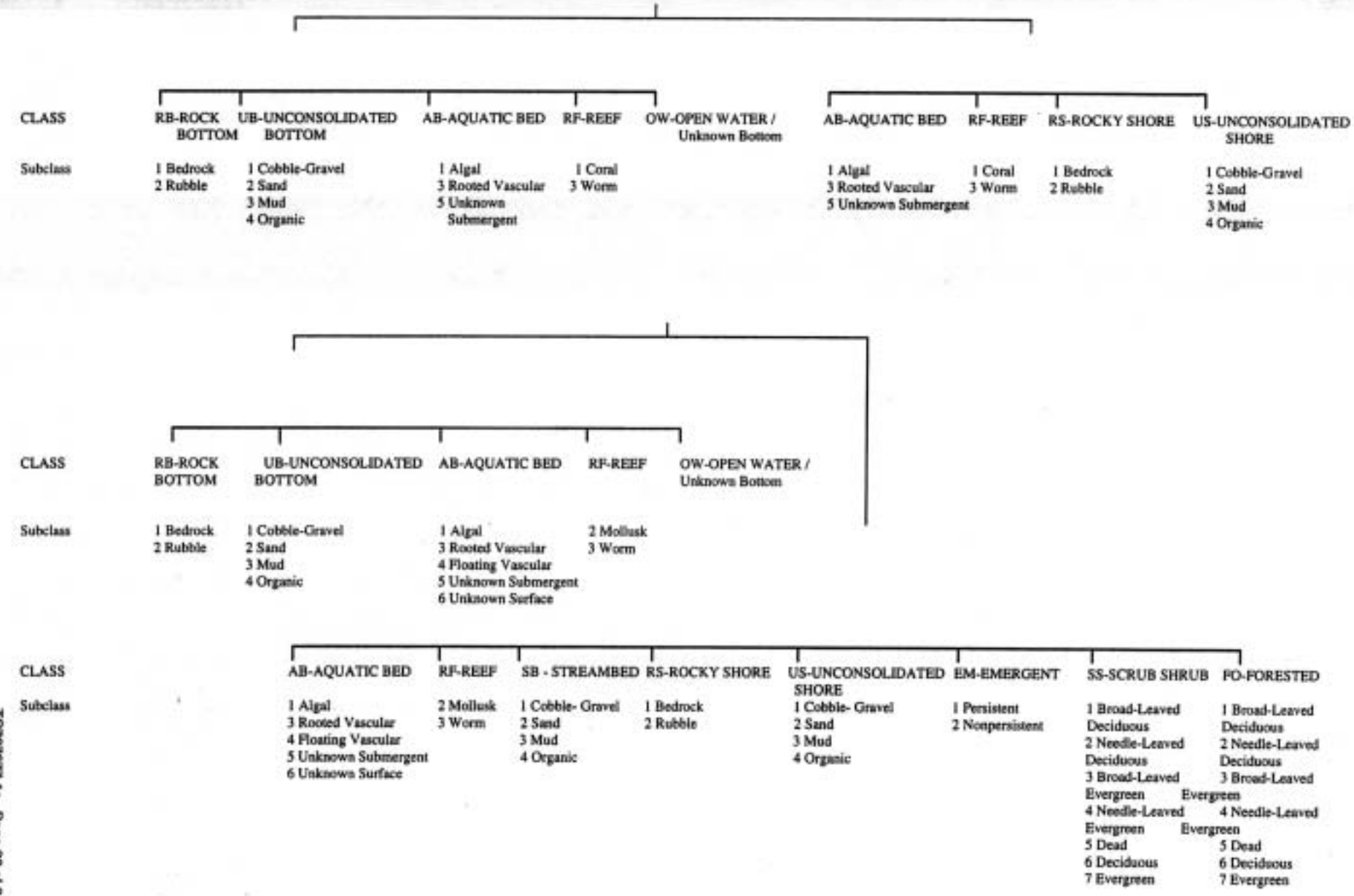
(as defined by Cowardin, et al. U.S. Fish and Wildlife Service FWS/OBS 79/31. 1979.)

The classification system consists of five systems:

1. marine
2. estuarine
3. riverine
4. lacustrine
5. palustrine

The marine system consists of deep water tidal habitats and adjacent tidal wetlands. The riverine system consists of all wetlands contained within a channel. The lacustrine systems includes all nontidal wetlands related to swamps, bogs & marshes. The estuarine system consists of deepwater tidal habitats and where ocean water is diluted by fresh water. The palustrine system includes nontidal wetlands dominated by trees and shrubs and where salinity is below .5% in tidal areas. All of these systems are divided in subsystems and then further divided into class.

National Wetland Inventory Maps are produced by transferring gathered data on a standard 7.5 minute U.S.G.S. topographic map. Approximately 52 square miles are covered on a National Wetland Inventory map at a scale of 1:24,000. Electronic data is compiled by digitizing these National Wetland Inventory Maps.


CLASS
RB-ROCK BOTTOM
UB-UNCONSOLIDATED BOTTOM
AB-AQUATIC BED
RF-REEF
OW-OPEN WATER / Unknown Bottom
AB-AQUATIC BED
RF-REEF
RS-ROCKY SHORE
US-UNCONSOLIDATED SHORE
Subclass
1 Bedrock
2 Rubble
1 Cobble-Gravel
2 Sand
3 Mud
4 Organic
1 Algal
3 Rooted Vascular
5 Unknown Submergent
1 Coral
3 Worm
1 Algal
3 Rooted Vascular
5 Unknown Submergent
1 Coral
3 Worm
1 Bedrock
2 Rubble
1 Cobble-Gravel
2 Sand
3 Mud
4 Organic
CLASS
RB-ROCK BOTTOM
UB-UNCONSOLIDATED BOTTOM
AB-AQUATIC BED
RF-REEF
OW-OPEN WATER / Unknown Bottom
Subclass
1 Bedrock
2 Rubble
1 Cobble-Gravel
2 Sand
3 Mud
4 Organic
1 Algal
3 Rooted Vascular
4 Floating Vascular
5 Unknown Submergent
6 Unknown Surface
2 Mollusk
3 Worm
CLASS
AB-AQUATIC BED
RF-REEF
SB - STREAMBED
RS-ROCKY SHORE
US-UNCONSOLIDATED SHORE
EM-EMERGENT
SS-SCRUB SHRUB
FO-FORESTED
Subclass
1 Algal
3 Rooted Vascular
4 Floating Vascular
5 Unknown Submergent
6 Unknown Surface
2 Mollusk
3 Worm
1 Cobble- Gravel
2 Sand
3 Mud
4 Organic
1 Bedrock
2 Rubble
1 Cobble- Gravel
2 Sand
3 Mud
4 Organic
1 Persistent
2 Nonpersistent
1 Broad-Leaved Deciduous
2 Needle-Leaved Deciduous
3 Broad-Leaved Evergreen
4 Needle-Leaved Evergreen
5 Dead
6 Deciduous
7 Evergreen
1 Broad-Leaved Deciduous
2 Needle-Leaved Deciduous
3 Broad-Leaved Evergreen
4 Needle-Leaved Evergreen
5 Dead
6 Deciduous
7 Evergreen

SYSTEM — **R - RIVERINE**

SUBSYSTEM	1 - TIDAL	2 - LOWER PERENNIAL	3 - UPPER PERENNIAL	4 - INTERMITTENT	5 - UNKNOWN PERENNIAL
CLASS	RB-ROCK BOTTOM UB-UNCONSOLIDATED BOTTOM *SB-STREAMBED AB-AQUATIC BED RS-ROCKY SHORE US-UNCONSOLIDATED SHORE **EM-EMERGENT OW-OPEN WATER/ Unknown Bottom				
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Bedrock 2 Rubble 3 Cobble-Gravel 4 Sand 5 Mud 6 Organic 7 Vegetated	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular 5 Unknown Submergent 6 Unknown Surface	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	2 Nonpersistent	

* STREAMBED is limited to TIDAL and INTERMITTENT SUBSYSTEMS, and comprises the only CLASS in the INTERMITTENT SUBSYSTEM.
**EMERGENT is limited to TIDAL and LOWER PERENNIAL SUBSYSTEMS.

SYSTEM — **L - LACUSTRINE**

SUBSYSTEM — **1 - LIMNETIC**

CLASS	RB-ROCK BOTTOM	UB-UNCONSOLIDATED BOTTOM	AB-AQUATIC BED	OW-OPEN WATER/ Unknown Bottom
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular 5 Unknown Submergent 6 Unknown Surface	

SUBSYSTEM — **2 - LITTORAL**

CLASS	RB-ROCK BOTTOM	UB-UNCONSOLIDATED BOTTOM	AB-AQUATIC BED	RS-ROCKY SHORE	US-UNCONSOLIDATED SHORE	EM-EMERGENT	OW-OPEN WATER/ Unknown Bottom
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular 5 Unknown Submergent 6 Unknown Surface	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	2 Nonpersistent	

SUBSYSTEM — **P - PALUSTRINE**

CLASS	RB--ROCK BOTTOM	UB--UNCONSOLIDATED BOTTOM	AB-AQUATIC BED	US--UNCONSOLIDATED SHORE	ML--MOSS-LICHEN	EM--EMERGENT	SS--SCRUB-SHRUB	FO--FORESTED	OW-OPEN WATER/ Unknown
Bottom									
Subclass	1 Bedrock 2 Rubble 3 Mud 4 Organic	1 Cobble-Gravel 2 Sand	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular 5 Unknown Submergent 6 Unknown Surface	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	1 Moss 2 Lichen	1 Persistent 2 Nonpersistent	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6Deciduous 7 Evergreen	

MODIFIERS

In order to more adequately describe wetland and deepwater habitats one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

WATER REGIME

Non-Tidal

A Temporarily Flooded
B Saturated
C Seasonally Flooded
D Seasonally Flooded/ Well Drained
E Seasonally Flooded/ Saturated
F Semipermanently Flooded
G Intermittently Exposed

Tidal

H Permanently Flooded
J Intermittently Flooded
K Artificially Flooded
W Intermittently Flooded/Temporary
Y Saturated/Semipermanent/ Seasonal
Z Intermittently Exposed/Permanent
U Unknown

Coastal Halinity

K Artificially Flooded
L Subtidal
M Irregularly Exposed
N Regularly Flooded
P Irregularly Flooded

Inland Salinity

*S Temporary-Tidal
*R Seasonal-Tidal
*T Semipermanent -Tidal
V Permanent -Tidal
U Unknown

*These water regimes are only used in tidally influenced, freshwater systems.

pH Modifiers for WATER CHEMISTRY

1 Hyperhaline
2 Euhaline
3 Mixohaline (Brackish)
4 Polyhaline
5 Mesohaline
6 Oligohaline
0 Fresh

7 Hypersaline
8 Eusaline
9 Mixosaline
0 Fresh

all Fresh Water

a Acid
c Circumneutral
i Alkaline

SOIL

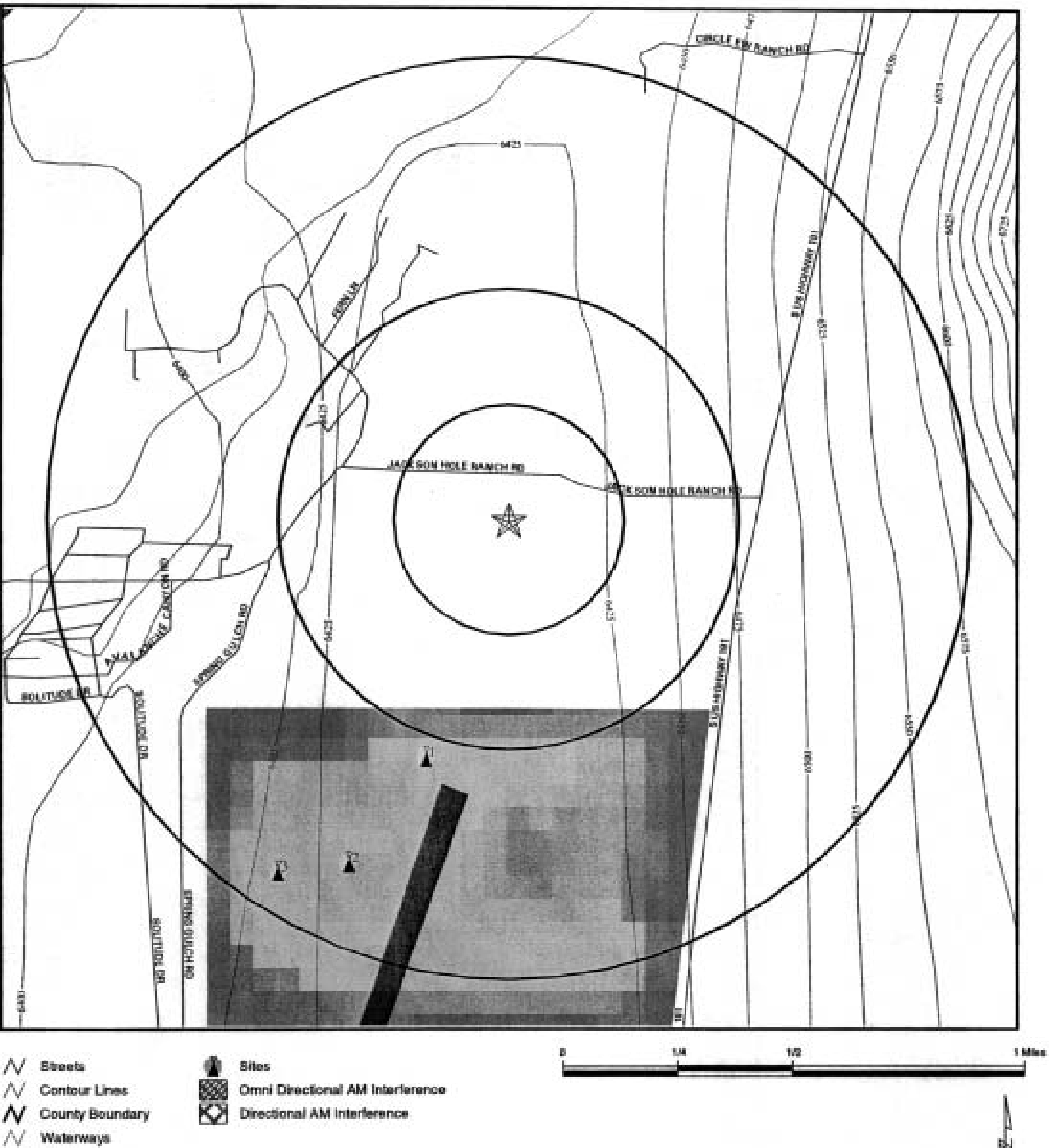
g Organic
n Mineral

SPECIAL MODIFIERS

b Beaver
d Partially Drained/Ditched
f Farmed
h Diked/Impounded
r Artificial Substrate
s Spoil
x Excavated

Source: U.S. Department of the Interior
Fish and Wildlife Service
National Wetlands Inventory

FCC & FAA Sites Map



TARGET PROPERTY:	Site 4	CUSTOMER:	FAA
ADDRESS:	Jackson Hole Airport	CONTACT:	Joseph Gibbens
CITY/STATE/ZIP:	Teton County WY 83001	INQUIRY #:	767677.1s
LAT/LONG:	43.6238 / 110.7305	DATE:	April 23, 2002

FCC & FAA SITES MAP FINDINGS

Map ID
Direction
Distance
Distance (ft.)

EDR ID
Database

1
SSW
1/2-1 mi
2887

DOF000000071618
FAA DOF

Unique ID:	510243	Obstruction #:	0243
City:	JACKSON	State:	Wyoming
Verification Status:	verified	Obstruction Type:	POLE
Latitude:	43 36 59N	Longitude:	110 44 00W
Frequency:	Not Reported	Type of Lighting:	Not Reported
Above Ground Level Height (Ft.):		0012	
Above Mean Sea Level Height (Ft.):		06452	
Horizontal Accuracy:	+-15'	Vertical Accuracy:	+-3'
Painted/Marked:	Not Reported	FAA Study #:	99OC0504

2
SSW
1/2-1 mi
4346

DOF000000071609
FAA DOF

Unique ID:	510234	Obstruction #:	0234
City:	JACKSON	State:	Wyoming
Verification Status:	verified	Obstruction Type:	TOWER
Latitude:	43 36 47N	Longitude:	110 44 12W
Frequency:	Not Reported	Type of Lighting:	Other Lighting
Above Ground Level Height (Ft.):		0053	
Above Mean Sea Level Height (Ft.):		06473	
Horizontal Accuracy:	+-15'	Vertical Accuracy:	+-3'
Painted/Marked:	Not Reported	FAA Study #:	99OC0504

3
SSW
1/2-1 mi
4828

TOW100000034992
TOWER

Tower ID:	138913		
Tower Owner Name:	JACKSON HOLE AIRPORT BOARD ON JACKSON HOLE AIRPORT, JACKSON, WY		
Latitude:	43 36' 157006"	Latitude (in seconds):	157006
Longitude:	110 44' 23"	Longitude (in seconds):	398663
Transmitter Latitude:	433646	Transmitter Longitude	1104423
Construction Date:		Activation Date:	Nov 10 1998
FAA Date:	Jun 29 1998	FCC Date:	Jun 29 1998
File Number:	842094	FAA ID:	98-DEN-174-NRA
Antenna Height:	0.0000	Antenna Height (M):	0.0000
Beacon Height:	0.0000	Beacon Height (M):	0.0000
Elevation:	6481.0000	Elevation FAA:	6481.0000
Elevation FAA (M):	1975.0000	Elevation (M):	1975.0000
Structure Height:	44.0000	Structure Height (M):	13.4000
Structure Height FAA:	44.0000	Structure Height FAA (M):	13.4000
Supporting Struct Hgt:	0.0000	Supporting Struct Hgt (M):	0.0000
Tower Height:	0.0000	Tower Height (M):	0.0000
Structure Type:	POL	Tower Type:	E
Key Remarks:		Date:	
Key Site:	90257	Record Action:	ADD
ID Exam:	PRB0	ID_ASB_ACC:	
Paint and Lighting Specs:			
Special Conditions/Remarks:			

This record is for a license, and it may or may not indicate a site which has been built.

KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

Various Federal laws and executive orders address specific environmental concerns. NEPA requires the responsible offices to integrate to the greatest practical extent the applicable procedures required by these laws and executive orders. EDR provides key contacts at agencies charged with implementing these laws and executive orders to supplement the information contained in this report.

NATURAL AREAS
Officially designated wilderness areas
Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service and Forest Service and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.

Date of Government Version: 09/01/1997

Federal Contacts for Additional Information

National Park Service, Intermountain Region
12795 Alameda Parkway
Denver, CO 80225
303-969-2500

USDA Forest Service, Rocky Mountain
740 Simms Street P.O. Box 25127
Lakewood, CO 80225
303-275-5160

USDA Forest Service, Intermountain
Federal Building 324 25th Street
Ogden, UT 84401-2310
801-625-5352

BLM - Wyoming State Office
5353 Yellowstone Road
Cheyenne, WY 82003
307-775-6256

Fish & Wildlife Service, Region 6
P.O. Box 25486 Denver Federal Center
Denver, CO 80225
303-236-7917

Officially designated wildlife preserves, sanctuaries and refuges
Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service and Forest Service and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.

Date of Government Version: 09/01/1997

WY Management Areas: Management Areas
Management areas in Wyoming, including National Forest, Wilderness, Park boundaries, Wildlife Habitat Management areas, state parks and other managed areas
Source: University of Wyoming.
Telephone: 307-766-2735

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 6
P.O. Box 25486 Denver Federal Center
Denver, CO 80225
303-236-7917

State Contacts for Additional Information

Game and Fish Commission 307-777-4501

Wild and scenic rivers

Government Records Searched in This Report

FED_LAND: Federal Lands
Source: USGS
Telephone: 703-648-5094
Federal data from Bureau of Land Management, National Park Service and Forest Service and Fish and Wildlife Service.
- National Parks
- Forests
- Monuments
- Wildlife Sanctuaries, Preserves, Refuges
- Federal Wilderness Areas.

Date of Government Version: 09/01/1997

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 6
P.O. Box 25486 Denver Federal Center
Denver, CO 80225
303-236-7917

Endangered Species

Federal Contacts for Additional Information

Fish & Wildlife Service, Region 6
P.O. Box 25486 Denver Federal Center
Denver, CO 80225
303-236-7917

State Contacts for Additional Information

Natural Diversity Database 307-745-5026

LANDMARKS, HISTORICAL, AND ARCHEOLOGICAL SITES

Historic Places

Government Records Searched in This Report

National Register of Historic Places:
The National Register of Historic Places is the official federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture. These contribute to an understanding of the historical and cultural foundations of the nation.

The National Register includes:
- All prehistoric and historic units of the National Park System;
- National Historic Landmarks, which are properties recognized by the Secretary of the Interior as possessing national significance; and
- Properties significant in American, state, or local prehistory and history that have been nominated by State Historic Preservation Officers, federal agencies, and others, and have been approved for listing by the National Park Service.

Date of Government Version: 03/15/2000

WY Historic Sites: Wyoming Registry of Sites Enrolled in the National Register of Historic Places
Listing of historic sites included on the National Register for Wyoming.
Source: State Historic Preservation Office.
Telephone: 307-777-7697

Federal Contacts for Additional Information

Park Service; Advisory Council on Historic Preservation
1849 C Street NW
Washington, DC 20240
Phone: (202) 208-6843

State Contacts for Additional Information

Wyoming State Historic Preservation Office 307-777-6300

Indian Religious Sites

Federal Contacts for Additional Information

Department of the Interior- Bureau of Indian Affairs
Office of Public Affairs
1849 C Street, NW
Washington, DC 20240-0001
Office: 202-208-3711
Fax: 202-501-1516

National Association of Tribal Historic Preservation Officers
1411 K Street NW, Suite 700
Washington, DC 20005
Phone: 202-628-8476
Fax: 202-628-2241

State Contacts for Additional Information

A listing of local Tribal Leaders and Bureau of Indian Affairs Representatives can be found at:
http://www.doi.gov/bia/areas/agency.html

Billings Area Office, Bureau of Indian Affairs
316 North 26th Street
Billings, MT 59101
406-247-7943

Scenic Trails

State Contacts for Additional Information
Continental Divide Trail Alliance
13700 Highway 285 P.O. Box 628
Pine, Colorado 80470
303-838-3760

FLOOD PLAIN, WETLANDS AND COASTAL ZONE

Flood Plain Management
Government Records Searched in This Report
Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

Federal Contacts for Additional Information
Federal Emergency Management Agency 877-3362-627

State Contacts for Additional Information
Wyoming Emergency Management Agency 307-777-4900

Wetlands Protection
Government Records Searched in This Report
NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 1999 from the U.S. Fish and Wildlife Service.

Federal Contacts for Additional Information
Fish & Wildlife Service 813-570-5412

State Contacts for Additional Information
Game & Fish Commission 307-777-4501

Coastal Zone Management
Government Records Searched in This Report
CAMA Management Areas
Dept. of Env., Health & Natural Resources
919-733-2293

Federal Contacts for Additional Information
Office of Ocean and Coastal Resource Management
N/ORM, SSMC4
1305 East-West Highway
Silver Spring, Maryland 20910
301-713-3102

State Contacts for Additional Information

KEY CONTACTS & GOVERNMENT RECORDS SEARCHED

FCC & FAA SITES MAP
For NEPA actions that come under the authority of the FCC, the FCC requires evaluation of Antenna towers and/or supporting structures that are to be equipped with high intensity white lights which are to be located in residential neighborhoods, as defined by the applicable zoning law.

Government Records Searched in This Report

Cellular
Federal Communications Commission
Mass Media Bureau
2nd Floor - 445 12th Street SW
Washington DC 20554 USA
Telephone (202) 418-2700

Tower
Federal Communications Commission
Mass Media Bureau
2nd Floor - 445 12th Street SW
Washington DC 20554 USA
Telephone (202) 418-2700

Antenna Registration
Federal Communications Commission
Mass Media Bureau
2nd Floor - 445 12th Street SW
Washington DC 20554 USA
Telephone (202) 418-2700

AM Tower
Federal Communications Commission
Mass Media Bureau
2nd Floor - 445 12th Street SW
Washington DC 20554 USA
Telephone (202) 418-2700

FAA Digital Obstacle File
National Oceanic and Atmospheric Administration
Telephone: 301-436-8301
Describes known obstacles of interest to aviation users in the US. Used by the Federal Aviation Administration (FAA) and the National Oceanic and Atmospheric Administration to manage the National Airspace System.

OTHER CONTACT SOURCES

NEPA Single Point of Contact
State Contacts for Additional Information
Department of Administration & Information
2001 Capitol Avenue
Room 214
Cheyenne, WY 82002
307-777-5492

Excessive Radio Frequency Emission
For NEPA actions that come under the authority of the FCC, Commission actions granting construction permits, licenses to transmit or renewals thereof, equipment authorizations or modifications in existing facilities, require the determination of whether the particular facility, operation or transmitter would cause human exposure to levels of radio frequency in excess of certain limits.

Federal Contacts for Additional Information

Office of Engineering and Technology
Federal Communications Commission
445 12th Street SW
Washington, DC 20554
Phone: 202-418-2470

APPENDIX FIVE
CENSUS BUREAU SUMMARY
TETON COUNTY, WYOMING

U.S. Census Bureau

State and County *QuickFacts*

QuickFacts Main | FAQs | What's New

Teton County, Wyoming

Wyoming counties - view map

Select a county Go

Locate a county by place name

Select a state

USA QuickFacts

Follow the ? link for definition and source information.

Browse more data sets for Teton County, Wyoming

	People QuickFacts	Teton County	Wyoming
?	Population, 2000	18,251	493,782
?	Population, percent change, 1990 to 2000	63.3%	8.9%
?	Persons under 5 years old, percent, 2000	5.2%	6.3%
?	Persons under 18 years old, percent, 2000	19.9%	26.1%
?	Persons 65 years old and over, percent, 2000	6.9%	11.7%
?	White persons, percent, 2000 (a)	93.6%	92.1%
?	Black or African American persons, percent, 2000 (a)	0.1%	0.8%
?	American Indian and Alaska Native persons, percent, 2000 (a)	0.5%	2.3%
?	Asian persons, percent, 2000 (a)	0.5%	0.6%
?	Native Hawaiian and Other Pacific Islander, percent, 2000 (a)	Z	0.1%
?	Persons reporting some other race, percent, 2000 (a)	3.9%	2.5%
?	Persons reporting two or more races, percent, 2000	1.2%	1.8%
?	Female persons, percent, 2000	46.7%	49.7%
?	Persons of Hispanic or Latino origin, percent, 2000 (b)	6.5%	6.4%
?	White persons, not of Hispanic/Latino origin, percent, 2000	91.3%	88.9%
?	High school graduates, persons 25 years and over, 1990	7,017	230,656
?	College graduates, persons 25 years and over, 1990	2,291	52,195
?	Housing units, 2000	10,267	223,854
?	Homeownership rate, 2000	54.8%	70.0%
?	Households, 2000	7,688	193,608
?	Persons per household, 2000	2.36	2.48
?	Households with persons under 18, percent, 2000	27.1%	35.0%
?	Median household money income, 1997 model-based estimate	$46,385	$33,197
?	Persons below poverty, percent, 1997 model-based estimate	4.9%	12.0%
?	Children below poverty, percent, 1997 model-based estimate	6.0%	15.3%

	Business QuickFacts	Teton County	Wyoming
?	Private nonfarm establishments, 1999	1,612	17,909
?	Private nonfarm employment, 1999	13,528	169,188
?	Private nonfarm employment, percent change 1990-1999	70.7%	28.1%
?	Nonemployer establishments, 1998	2,739	34,286

?	Manufacturers shipments, 1997 ($1000)	NA	2,955,070
?	Retail sales, 1997 ($1000)	300,868	4,530,537
?	Retail sales per capita, 1997	$21,642	$9,438
?	Minority-owned firms, percent of total, 1997	F	4.3%
?	Women-owned firms, percent of total, 1997	23.4%	22.6%
?	Housing units authorized by building permits, 2000	326	1,582
?	Federal funds and grants, 2000 ($1000)	64,781	3,219,890
?	Local government employment - full-time equivalent, 1997	908	27,423

	Geography QuickFacts	Teton County	Wyoming
?	Land area, 2000 (square miles)	4,008	97,100
?	Persons per square mile, 2000	4.6	5.1
?	Metropolitan Area	None	

(a) Includes persons reporting only one race.
(b) Hispanics may be of any race, so also are included in applicable race categories.

FN: Footnote on this item for this area in place of data
NA: Not available
D: Suppressed to avoid disclosure of confidential information
X: Not applicable
S: Suppressed; does not meet publication standards
Z: Value greater than zero but less than half unit of measure shown
F: Fewer than 100 firms

Data Quality Statement

What do you think of our new QuickFacts? Send comments to quickfacts@lists.census.gov

Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, 2000 Census of Population and Housing, 1990 Census of Population and Housing, Small Area Income and Poverty Estimates, County Business Patterns, 1997 Economic Census, Minority- and Women-Owned Business, Building Permits, Consolidated Federal Funds Report, 1997 Census of Governments

Last Revised: Thursday, 07-Feb-2002 14:19:45 EST

Browse more data sets for Teton County, Wyoming

U.S. Census Bureau

Census 2000 *Housing Units*

Housing Counts Main | FAQs |

Geographic Area	Housing Units (count)
Census 2000 U.S. Housing Unit Count	
-- Wyoming	223,854
-- Albany County	15,215
-- Big Horn County	5,105
-- Campbell County	13,288
-- Carbon County	8,307
-- Converse County	5,669
-- Crook County	2,935
-- Fremont County	15,541
-- Goshen County	5,881
-- Hot Springs County	2,536
-- Johnson County	3,503
-- Laramie County	34,213
-- Lincoln County	6,831
-- Natrona County	29,882
-- Niobrara County	1,338
-- Park County	11,869
-- Platte County	4,528
-- Sheridan County	12,577
-- Sublette County	3,552
-- Sweetwater County	15,921
-- Teton County	10,267
-- Uinta County	8,011
-- Washakie County	3,654
-- Weston County	3,231

[Back to Wyoming] [Select another State]

Census 2000 | Subjects A to Z | Search | Product Catalog | Data Access Tools | FOIA | Privacy Policies | Contact Us | Home

Back to Basic Facts

Geographic Comparison Table

GCT-PL. Race and Hispanic or Latino: 2000
Data Set: Census 2000 Redistricting Data (Public Law 94-171) Summary File
Geographic Area: **Wyoming -- County**

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see http://factfinder.census.gov/home/en/datanotes/expplu.html.

Geographic area	Total population	Race								Hispanic or Latino(of any race)
		One race							Two or more races	
		Total	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race		
Wyoming	493,782	484,899	454,670	3,722	11,133	2,771	302	12,301	8,883	31,669
COUNTY										
Albany County	32,014	31,304	29,235	354	305	545	18	847	710	2,397
Big Horn County	11,461	11,294	10,777	13	86	24	8	386	167	707
Campbell County	33,698	33,248	32,369	51	313	108	29	378	450	1,191
Carbon County	15,639	15,318	14,092	105	199	105	9	808	321	2,163
Converse County	12,052	11,875	11,416	18	110	32	3	296	177	660
Crook County	5,887	5,843	5,761	3	60	4	0	15	44	54
Fremont County	35,804	35,011	27,388	44	7,047	106	9	417	793	1,566
Goshen County	12,538	12,395	11,764	25	108	25	15	458	143	1,107
Hot Springs County	4,882	4,819	4,685	17	74	12	0	31	63	116
Johnson County	7,075	6,963	6,865	6	45	8	0	39	112	148
Laramie County	81,607	79,513	72,563	2,124	693	777	89	3,267	2,094	8,897
Lincoln County	14,573	14,399	14,157	15	83	33	8	103	174	315
Natrona County	66,533	65,412	62,644	505	686	277	25	1,275	1,121	3,257
Niobrara County	2,407	2,390	2,360	3	12	3	0	12	17	36
Park County	25,786	25,508	24,872	23	122	114	13	364	278	959
Platte County	8,807	8,695	8,471	14	44	15	2	149	112	465
Sheridan County	26,560	26,204	25,465	49	338	102	33	217	356	646
Sublette County	5,920	5,862	5,771	12	29	14	5	31	58	112
Sweetwater County	37,613	36,721	34,461	275	380	240	16	1,349	892	3,545
Teton County	18,251	18,028	17,081	27	97	99	6	718	223	1,185
Uinta County	19,742	19,446	18,621	22	172	54	13	564	296	1,056
Washakie County	8,289	8,109	7,478	9	46	61	0	515	180	951

APPENDIX SIX
AGENCY COMMUNICATIONS

U.S. Department
Of Transportation

**Federal Aviation
Administration**

Northwest Mountain Region
Colorado, Idaho, Montana,
Oregon, Utah, Washington,
Wyoming

1601 Lind Avenue, S.W.
Renton, WA 98055-4056

March 27, 2002

Steve Iobst
National Park Service,
Grand Teton National Park
P.O. Box 170
Moose, WY 83012

Dear Mr. Iobst,

Thank you for taking the time to speak with me on the phone. As we discussed, the Federal Aviation Administration (FAA) is evaluating the replacement/relocation of the Very High Frequency Omnidirectional Range (VOR) at the Jackson Hole Airport, Grand Teton National Park, Teton County, Wyoming. The VOR is a ground-based electronic navigational aid that transmits very high frequency signals in all directions (360 degrees in azimuth, oriented from magnetic north). VOR's are a critical navigational component in the National Airspace System.

The existing VOR at the airport is located on the east side of the runway north of the terminal building, approximately 200 feet from the main taxiway and 650 feet from the runway centerline. Degradation of the VOR building is such that the building must be replaced, with an estimated downtime for the VOR of at least two months. To avoid leaving the airport without VOR capabilities for this time frame, a temporary VOR would typically be set up and operated. As the development of new procedures and flight checks for a temporary VOR would be similar in scope to those required for installation of a new, next-generation system, this option will also be evaluated. In addition to the advantage of having a next generation system, construction of a new VOR could be completed at a more accessible site on the airport further removed from the terminal and taxiway.

Four potential sites for the next-generation VOR have been preliminarily identified on leased airport property based on engineering considerations. These sites are:

Site 1 – east of the runway near the existing VOR building;
Site 2 – west of the runway and north of the new air traffic control tower;
Site 3 – southeast of the southeastern corner of the runway;
Site 4 – on the extended runway centerline near the north airport boundary.

These potential locations are shown on the attached figure.

I am beginning preparation of an Environmental Assessment for the proposed replacement/relocation of the VOR at the Jackson Hole Airport. The FAA project team understands that there will special project requirements due to the location of the airport within the Grand Teton National Park boundary. We look

forward to working with the National Park Service to ensure that site selection, design and construction of the proposed VOR ensure the operational effectiveness of the VOR and aircraft safety at the airport while protecting the natural environmental of the park.

Thank you for taking the time to assist us with this matter. We look forward to working with the National Park Service to successfully complete this project.

Sincerely,

Joseph Gibbens, P.E.
Environmental Program Engineer
(425)-227-2310
joseph.gibbens@faa.gov

cc: John Blakely, NPS
Dan Sage, FAA
Julia Stoudt, FAA
Cindy Felis, FAA

U.S. Department
Of Transportation

**Federal Aviation
Administration**

Northwest Mountain Region
Colorado, Idaho, Montana,
Oregon, Utah, Washington,
Wyoming

1601 Lind Avenue, S.W.
Renton, WA 98055-4056

April 17, 2002

Ms. Mary M. Hopkins
Wyoming State Historic Preservation Office
P.O. Box 3431
University Station
Laramie, WY 82071

Dear Ms. Hopkins:

The Federal Aviation Administration is proposing construction of a new Very High Frequency, Omni-Directional Range (VOR) at the Jackson Hole Airport, Wyoming. The proposed location for this VOR is approximately 2,500 feet north of the runway, on the runway centerline. I am currently preparing an environmental assessment (EA) for this project and would appreciate your office conducting a file search for this proposed project.

The proposed VOR system would consist of an equipment building with an antenna located on top an adjacent tower. Some shallow excavation will be required to build the foundation for the tower and to bury the telco and power lines extending from the air traffic control tower to the VOR. The following information is provided for your use:

Name: Joseph Gibbens

Company: Federal Aviation Administration

Client Name: Jackson Hole Airport

Project Name: Proposed VOR

County: Teton

Legal Location: Excavation for VOR tower foundation to occur in SW ¼ of NE ¼ of Section 11, Township 42 North, Range 116 West. Trench for telco and power will extend southwest from VOR through the SW ¼ of Section 11 and the NW ¼ of Section 14, Township 42 North, Range 116 West.

Project Type: Excavation for tower foundation and utility trench.

Project Number: NA

Results to be mailed.

If you have any questions or require any additional information please feel free to call me at (425) 227-2310. Thank you very much for your assistance on this matter.

Sincerely,

Joseph Gibbens, P.E.
Environmental Program Engineer

WYOMING

DEPARTMENT OF STATE PARKS & CULTURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE

Barrett Building
2301 Central Ave.
Cheyenne, WY 82002

(307) 777-7697
FAX (307) 777-6421

April 23, 2002

Mr. Joseph Gibbens, P.E.
Federal Aviation Adminsitration
1601 Lind Avenue, S.W.
Renton, WA 98055-4056

RE: FAA, Very High Frequency, Omni-Directinal Range (VOR) at the Jackson Hole Airport (SHPO File # 0693KLK004)

Dear Mr. Gibbens:

Our staff has received information concerning the aforementioned project. Thank you for allowing us the opportunity to comment.

A file search conducted by our staff on 04/23/02 shows no archeological or historic sites are known to exist in the proposed project area. The area has been surveyed for cultural resources in 1993 by Scientific Resource Surveys for the Jackson Hole Airport expansion. No Class III cultural resource survey is warranted. There is a possibility that buried prehistoric or historic materials may exist and may be uncovered during project construction.

We recommend the Federal Aviation Administration incorporate the following stipulation in the project permit: If any cultural materials are discovered during construction, work in the area should halt immediately and the FAA staff and SHPO staff must be contacted. Work in the area may not resume until the materials have been evaluated and adequate measures for their protection or collection have been taken.

This letter should be retained in your files as documentation of our determination that no historic properties will be affected by this project.

If you have any questions, please contact me at 307-766-5324.

Sincerely,

Mary M. Hopkins

Mary M. Hopkins, Deputy
State Historic Preservation Office